United States Department of the Interior
National Park Service

National Register of Historic Places
Multiple Property Documentation Form

This form is used for documenting multiple property groups relating to one or several historic contexts. See instructions in How to Complete the Multiple Property Documentation Form (National Register Bulletin 16B). Complete each item by entering the requested information. For additional space, use continuation sheets (Form 10-900-a). Use a typewriter, word processor, or computer to complete all items.

_x_ New Submission __ Amended Submission

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A. Name of Multiple Property Listing

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Historic Agriculture-Related Resources of Kansas

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B. Associated Historic Contexts

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(Name each associated historic context, identifying theme, geographical area, and chronological period for each.)

Breaking Sod: Pre-Railroad Farming
Promised Land: Railroad, Immigration, Wheat and Cash in the 1870s
The Best and Worst of Times: Ranching, Diversification and Drought in the 1880s
Less Corn and More Hell: Kansas Populism in the 1890s
The Golden Age: Farming in the Progressive Era, 1900-1920
Down and Out: Farming the Great Depression, 1920-1941
Producing for Victory: World War II, 1941-1945
Consolidation and Corporations: the Post-War Years, 1945-1960
Agriculture-Related Construction Materials and Techniques

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C. Form Prepared by

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name/title Christy Davis / Davis Preservation and Brenda Spencer / Brenda Spencer Preservation Planning

street & number 909 ½ Kansas Avenue, Suite 7

city or town Topeka **state** KS **zip code** 66612

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D. Certification

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As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. [ ] See continuation sheet for additional comments.)

_____ Signature
and title of certifying official Date

_____
State or Federal agency and bureau

I hereby certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

_____
Signature of the Keeper Date

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Table of Contents for Written Narrative

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Provide the following information on continuation sheets. Cite the letter and the title before each section of the narrative. Assign page numbers according to the instructions for continuation sheets in How to Complete the Multiple Property Documentation Form (National Register Bulletin 16B). Fill in page numbers for each section in the space below.

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Table of Contents for Written Narrative

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Table of Contents for Written Narrative

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F. Associated Property Types, Cont'd

G. Geographical Data

State of Kansas

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E. STATEMENT OF HISTORIC CONTEXTS

Figure 1: "Drouthy Kansas" A Charcoal Sketch by Kansas emigrant Henry Worrall. Courtesy Kansas State Historical Society, kansasmemory.org.

I. A HISTORY OF KANSAS AGRICULTURE, 1854-1960

Introduction

Agriculture has been a way of life in Kansas for more than a millennium. For centuries, American Indians used fire to manage herds of bison on the plains. Before 1000 AD, Hopewellian peoples cultivated the rich river valleys. When Euro-American farmers first arrived on the Plains, they, like the native farmers before them, often employed very simple hand tools. These labor-intensive techniques, even when aided by oxen, horses and steel plows, made it necessary for most families to spend the majority of their time producing the goods necessary for survival. In the seminal years of early Kansas statehood, when 90 percent of the labor force was engaged in such subsistence farming, agriculture played a key role in the formation of the state's economy, political system, and culture.

In the late Nineteenth Century, a wealth of time-saving farm implements ushered in an agricultural revolution that would place Kansas on a new path. As the farm economy has evolved from subsistence to cash production to corporate farming, the size of the average farm has grown from 80 or 160 acres to nearly 800 acres. Today, farmers in the nation's largest wheat-producing state make up only 1 percent of the state's working population.

Despite this great economic shift, the state's ethos, built environment, and cultural landscapes testify to agriculture's continued influence on Kansas culture. Although the vast majority of Kansans no longer have a direct relationship with the land, they have inherited an enduring Kansas character. For generations, unpredictable blizzards, droughts and plagues directly shaped a society of resilient hard-working people. Likewise, although many farmsteads are no longer occupied by farmers, they often retain their historic character. Terraced river valleys and fire-shaped prairies are evidence of attempts to tame the land. Sturdy barns stand as a testament to a bygone era when farm families made deep sacrifices for the benefit of the farm – a time when protecting their capital - their hay, grain and draft animals - was so paramount that farmers completed permanent barns before constructing permanent houses. Barns, farmhouses, and outbuildings interpret every day life on the family farm, a life foreign to most contemporary Americans.

Figure 2: Collapsed Barn in Rooks County. Brenda Spencer.

Today, the rural landscape, once a part of most Kansans' daily life, is threatened. Some Kansans are apologetic about their state's rural heritage – devaluing farmland and farm-related buildings as irrelevant bygone relics standing in the way of suburban progress. Community leaders and corporate developers, who see open land as an endless resource, take the rural built environment and cultural landscape for granted. Unfortunately, the barns, grain elevators, mills, farmhouses and farmland that interpret our state's agricultural history are being lost to demolition and neglect. The Thompson-Wohlschlegel Barn offers a cautionary tale about what can happen when the buildings that interpret our rural heritage do not receive their deserved attention. This well-known and oft-photographed Harper County round barn with attached silos was listed in the National Register of Historic Places in 1985. Despite the designation, the barn continued to deteriorate until the roof finally collapsed to the ground.

The Kansas State Historical Society has endeavored to identify and take steps to protect the state's agriculture-related buildings by surveying more than 300 barns and preparing this Multiple Property Documentation Form to assist property owners in listing their agriculture-related buildings and features. The document includes two historic contexts. The first context, *History of Kansas Agriculture, 1854-1960*, provides a succinct history of agriculture in Kansas, with emphasis on the cultural influences of settlement, immigration, and transportation. This historical context is divided into chronological subchapters. The first subchapter, "Breaking Sod: Pre-Railroad Farming in Kansas" explores the state's Territorial period and early statehood. It discusses agricultural practices and trends prior to the arrival of the railroad, which coincided with a period of rapid development and technological advances. Although the railroad reached different regions of the state at different times, rail lines had saturated the state by the mid-1880s. The second subchapter, "Promised Land: Railroad, Immigration, Wheat and Cash in the 1870s," explores the transition from subsistence farming to cash production made possible by the broadened railroad market. The railroad, with thousands of acres of trust land to sell, expedited immigration. "The Best and Worst of Times: Diversification and Drought in the 1880s," the third subchapter, explores the 1880s boom and bust. The fourth subchapter, "Less Corn and More Hell: Kansas Populism in the 1890s," details the agrarian revolt of cash-strapped farmers. "The Golden Age: Farming in the Progressive Era, 1900-1920," the fifth subchapter, explores a period that culminated in peak grain prices during World War I, when Kansas filled a worldwide demand for grain. The sixth subchapter entitled "Down and Out: Farming the Great Depression, 1920-1941," covers a period of low crop prices. Whereas the Great Depression generally dates to the stock market crash in 1929, the hard times hit farmers early. "Producing for Victory: World War II, 1941-1945," explores ramped-up wartime production. The final subchapter "Consolidation and Corporations: the Post-War Years, 1945-1960," details the postwar decline in farm population.

The second context, *Agriculture-Related Construction Materials and Techniques*, provides a summary of the materials and techniques employed in the construction of agriculture-related buildings. Together, these contexts explore the relationship between cultural influences and the development of construction techniques commonly used in the state's farm buildings. Property types are discussed in more detail in Section F, "Associated Property Types."

Breaking Sod: Pre-Railroad Farming

The Kansas-Nebraska Act of 1854 opened millions of acres of land to permanent white settlement. In the following two decades, Kansas experienced a period of rapid change. Before 1854, this un-surveyed land was home to a decimated Indian population of 10,000 removed to reservations, a smattering of Indian missions funded in part by government contracts, and a few military outposts constructed to protect wagon trains traveling west. By 1875, over ½ million residents filled the state's growing number of cities, towns and rural areas, covering every region of the state.[1] The vast majority of

1 1875 Kansas Census.

the ½ million Kansans were farmers. Before the railroad reached the rural regions, most of the farming families managed subsistence operations - raising vegetables, poultry and livestock; building structures with locally available materials like sod and logs; and bartering for anything they could not produce themselves.

Figure 3: Delaware Indian Farm, 1867. Courtesy Kansas State Historical Society, kansasmemory.org.

Although indigenous American Indian village farmers and later emigrant Indians and missionaries had successfully farmed in Kansas, the land was off limits to white settlers until 1854 for three principal reasons. First, many Euro-Americans believed the land, identified on maps as the "Great American Desert," was not well-suited to farming. Second, the western border of Missouri had been designated the "Permanent Indian Frontier," with Kansas and Oklahoma divvied up among the remaining Indian tribes. And third, politicians were reticent to open Kansas to white settlement for fear the move could tip the fine balance between free and slave states.

During the first years of the Territorial period, white settlers came to help populate the place with voters who would decide the state's slave status. Among the early waves of freestate emigrants recruited by the New England Emigrant Aid Company (NEEAC), there were few farmers. In fact, there were only two farmers among the original twenty-nine NEEAC emigrants.[2] In contrast to the first New England emigrants, the majority of early Southerners, including those from Missouri, were experienced farmers who came to till the land. Half of the delegates to the proslavery Lecompton Constitutional Convention were southern farmers. However, many of these returned to the South when they learned that the Kansas soil was not suitable for the production of hemp, tobacco or cotton – or when their political leanings or perceived political leanings created the threat of violence against them.[3] Jayhawker James H. Lane opined that Kansas might have become a slave state if its soil and climate were better suited to southern cash crops.[4]

2 James Malin, "Housing Experiments in the Lawrence Community, 1855," *Kansas Historical Quarterly* vol. 21, no. 2 (Summer 1954), 95-121.
3 Gunja SenGupta, *For God and Mammon: Evangelicals and Entrepreneurs, Masters and Slaves in Territorial Kansas, 1854-1860* (Athens, Ga.: University of Georgia Press, 1996), 42.
4 Nicole Etcheson, *Bleeding Kansas: Contested Liberty in the Civil War Era* (Lawrence: University Press of Kansas, 2006), 42.

Recognizing a need for experienced northern farmers, the freestaters set about recruiting, boasting in their *Kansas Free State* newspaper that "Every person who knows anything about farming, can make money on a claim from the very day that he goes on it."[5] Like many who responded to the call, Miriam Davis Colt's family, who came to Kansas as part of a utopian vegetarian colony, took the train west to St. Louis, where the emigrants purchased "wagons and farming implements to take along on the steamer up to Kansas City," where they purchased oxen.[6] Kansas pioneer Sherman Young recalled that his father's crude implements included "a double shovel, two wooden beams, stirring plow and an axe." With these simple tools, Young broke the sod and planted corn "by chopping an opening in the ground with one stroke of his axe, dropping in three kernels of corn and then stepping on the opening to cover the corn."[7]

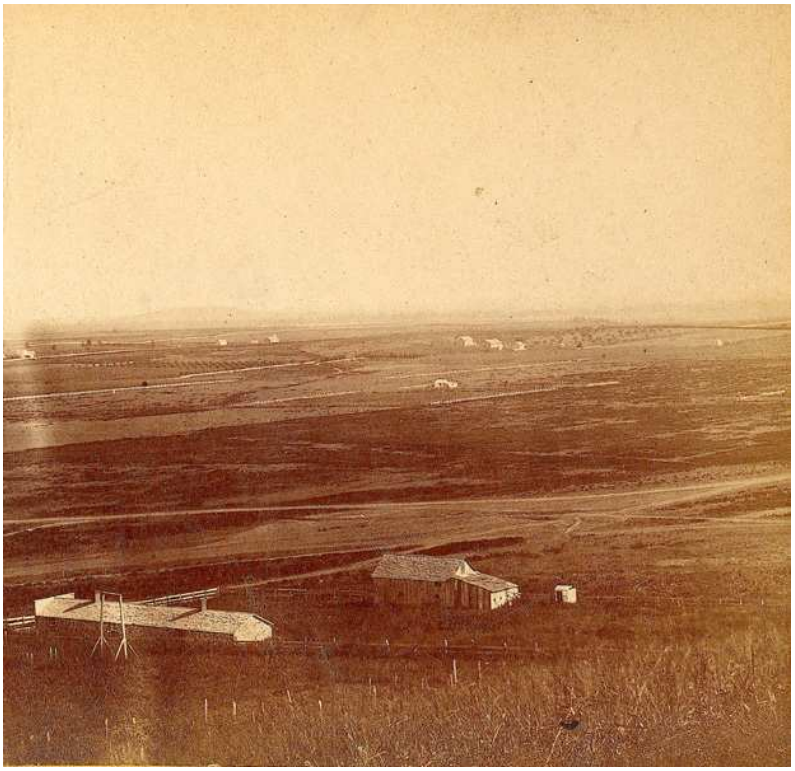

Figure 4: Farms in Wakarusa Valley, near Lawrence. Courtesy Kansas State Historical Society, kansasmemory.org.

Most early Kansans were subsistence farmers who augmented their living by bartering farm goods, like eggs and butter, for manufactured goods, from flour to fabric. In the years before extensive railroad networks, transportation expenses prohibited broad markets for farm goods. Farm markets usually fell within a fifty-mile radius. Although some pioneers had dairy cows to supply milk and chickens for eggs, few had hogs or cattle. Therefore, they relied heavily upon wild game such as deer and bison for fresh meat. Before they could plant gardens, the pioneers relied upon wild berries and fruits: "We find growing wild a fine vegetable called 'Osage plums,' which grow somewhat like cranberries and look almost precisely like our common gooseberry. When boiled they taste very much like green peas, and are eaten freely by us. They are found in considerable quantities without difficulty upon the open prairie."[8] Soon after arriving at their new homes, emigrants planted gardens. "I have already started some grape-vines, strawberries, currants,

5 *Kansas Free State*, 7 February 1855.
6 Miriam Davis Colt, *A Heroine of the Frontier: Miriam Davis Colt in Kansas, 1856; Extracts From Mrs. Colt's Diaries* (With and introduction by J. Christian Bay. Cedar Rapids: Priv. Print. For the friends of the Torch Press, 1941), 15-17.
7 Sherman Peter Young, *The Factual History of Kansas* (1954). (accessed online at http://www.kancoll.org/articles/young/)
8 Charles B. Lines, 13 May 1856. (Territorial Kansas Online)

blackberries, raspberries, and a few pear trees, brought from my own garden in New Haven, and from present appearances they do well. I intend to-morrow to plant melons, tomatoes, potatoes, and all the ordinary garden vegetables…"[9]

The freestaters' efforts to recruit farmers resulted in an influx of emigrants who hailed from the Old Northwest, a collection of states including Ohio, Indiana and Illinois, bounded by the Great Lakes and the Ohio and Mississippi Rivers. Unlike many Southern farmers, most Northwest farmers, who found the Kansas climate similar to that in their home states, stayed. One of these Northwest emigrants was Samuel Reader, who came to Kansas from La Harpe, Illinois: "Rich, cheap farm land was the principal incentive that lured me on from my Illinois home. I had heard and read much concerning the political troubles in the territory; but. . . . In fact I had given little thought to the subject."[10] Ironically, Northwest farmers found success with corn, first cultivated in Kansas by American Indian village farmers. Corn remained the state's principal cash crop for the following two decades. Using simple tools, oxen and hard labor, pioneer subsistence farmers provided for their families and began to re-shape the Kansas landscape.

By the late 1850s, more advanced farming implements were available to Kansas farmers who could afford them. The first steel plows, known as "sod-busters," were first widely available from the John Deere Company in the late 1830s. At the time Kansas became a territory, John Deere was selling an average of 10,000 plows per year. Ironically, early Kansas farmers received their implements from Missouri, specifically Westport, from which capitalist T. H. Ellis shipped some of the state's first plows. In 1856, Ellis sold plows from two "large loads" for $55 each.[11] Those who could afford sod-busters cut their plowing time in half. Even for farmers with steel plows and oxen or horses, turning the root-laden virgin ground was back-breaking work. Charles B. Lines, who emigrated from Connecticut to Wabaunsee County in 1856, reported that "a team of three stout yoke of oxen [was] required" to break up the firm "primeval turf" at a rate of one acre per day.[12] Euro-American farmers, with the exception of those who were married to Indians with land allotments, seldom held clear title to the land they worked so hard to till. Early on, farmers could obtain land by purchase, military warrant, or "preemption." Before settlers could purchase federal land, they had to wait for the government to survey it. Because Congress opened the Territory for settlement before it was surveyed – and before it had settled Indian land treaties, most whites living in Kansas before 1858 were squatters, people who lived on land until they could properly purchase it from the government. Public land sales did not commence until 1858, four years after the territory opened to white settlement.[13] Still, farmers, many of them squatting on Indian land, had planted much of eastern Kansas by 1857. Lawrence pioneer Reverend Samuel Lum marveled that "In little over three years, the wild unbroken prairie is teeming with life crowded with

9 Charles B. Lines, 17 May 1856. (Territorial Kansas Online)
10 Kansas State Historical Society, Territorial Kansas Exhibit.
11 Letter from TH Ellis to Thomas Stinson 23 April 1856. (Territorial Kansas Online)
12 Charles B. Lines, 8 May 1856. (Territorial Kansas Online)
13 KP Plan, 46.

busy intelligent farmers …"[14] Between 1858 and 1861, landowners filed 3417 mortgages on first claims.[15] By 1860, the state's population had grown to 100,000;[16] there were 10,400 farms in Kansas, occupying 3.4 percent of the territory's land area.[17]

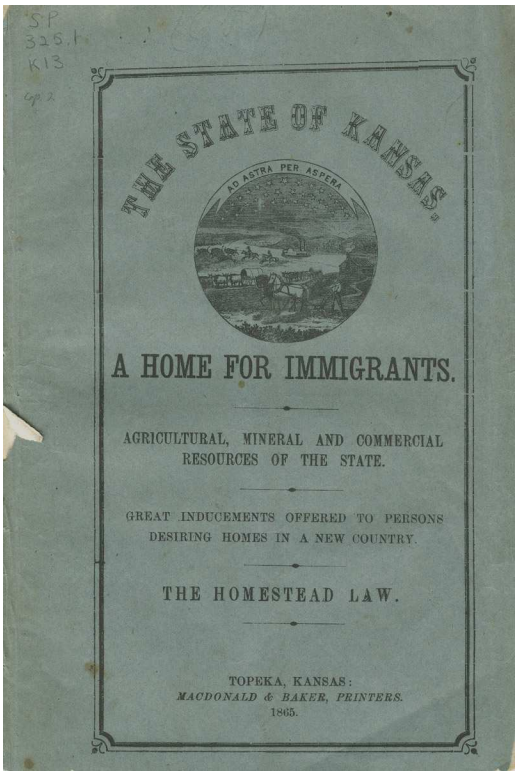

Figure 5: An 1865 copy of the Homestead Law. Courtesy Kansas State Historical Society, kansasmemory.org.

During the 1860s, farming was greatly shaped by the Civil War and legislation passed by the Republican-dominated Congress after the Southern states seceded from the Union. Like most wars, the Civil War encouraged a demand for technological developments that would improve production at a time when labor was in short supply. Pre-war advances helped ease the transition from hand tools to mass-produced farm implements. Between 1850 and 1860, annual sales of farm machinery in the United States tripled from $7 million to $21 million. New seed drills not only doubled the speed by which seeds were sown, but also helped ensure the seeds, formerly broadcast by hand, would not be carried away by birds or wind.[18] Lever-operated corn planters resulted in a 2000 percent increase in a farmer's productivity.[19] Listers combined the action of plowing and planting in dry areas, conserving both moisture and time. As machine-aided farmers became more productive, fewer farmers were needed to till the soil.

Two war-time laws, the Morrill Act and the Homestead Act, had a profound impact on the future of Kansas agriculture. Passed at a time when 90 percent of Americans were farmers, both acts represented a culmination of decades of efforts among American groups to liberalize the disposition of federal lands for farming. In the years leading up to the Civil War, free-soilers had favored the surplus of federal lands as a way to curb the expansion of slavery by promoting subsistence farming. The 1860 platform of the new Republican Party demanded "the passage by Congress of the complete and satisfactory Homestead measure."[20] After southern states seceded following the election of Abraham Lincoln, Congress had the votes it needed to pass both the Homestead and Morrill Acts. Under the Morrill Act,

14 Sengupta, 70.
15 Paul Wallace Gates, *Fifty Million Acres: Conflicts over Kansas Land Policy, 1854-1890* (Cornell: Cornell University Press, 1954), 89-100.
16 KP Plan, 12
17 Morgan Andrew Kreek, *The Farm Mortgage Credit Situation in Kansas, 1929 to 1935* (Masters Thesis. Kansas State Agricultural College, 1936), 5.
18 James Malin, *Winter Wheat in the Golden Belt of Kansas: A Study in Adaptation to Subhumid Geographical Environment* (Lawrence: University Press of Kansas, 1944), 20.
19 Ronald Stokes Barlow, *300 Years of Farm Implements and Machinery, 1630-1930* (Iola, WI: Krause Publications, 2003), 44.
20 Henry Steele Commager, ed, *Documents of American History*, 8th ed. (New York, 1968), 363-65.

ratified July 2, 1862, Kansas established a system for agricultural education. The legislation authorized the federal government to grant federal land to states, which sold the property to fund the establishment of "Colleges for the Benefit of Agriculture and the Mechanic Arts." Kansas' two U. S. Senators and one U. S. Representative qualified the state for a 90,000-acre federal land grant. In 1863, Lawrence, which lost its bid for state capital, was granted the state university - and Manhattan became home to the Kansas State Agricultural College (KSAC), the first land grant college created under the Morrill Act.[21]

The KSAC agriculture programs were established very gradually. Before the 1870s, KSAC's lack of farmland and agriculture-related buildings left it incapable of offering students hands-on agricultural experience. The college did not construct its first barn until 1872. Built at the substantial cost of $11,000, the barn was usurped by other college departments in 1875. Despite early setbacks at KSAC, the Morrill Act created the framework for future agriculture programs, such as the Agricultural Experiment Station, which advised Kansans on farming and livestock practices and made recommendations on agriculture-related buildings, and the KSAC architecture program, which promoted standards for the design and construction of farm-related buildings in the Twentieth Century.[22]

The Homestead Act, also enacted 1862, brought additional lands into production to help meet the wartime demand for agricultural goods. The program provided American citizens "or those who [had] declared their intention to become such" with 160 acres of land, provided they lived on and cultivated the land for five years.[23] Kansas politicians, including Senator Samuel Pomeroy, leant their strong support for the bill. The act would not only benefit largely unsettled agricultural states like Kansas, but also would advance the war effort by providing an incentive for soldiers to join the Union Army. For each year of service, a Union veteran's "proving up" period was reduced by one year. Between 1863 and 1890, Kansas homesteaders filed for 20,881,818 acres of land through the Homestead Act.[24]

Despite the "free land" incentive, the majority of homesteaders failed to meet their end of the bargain. In fact, only 41 percent of filers succeeded in gaining title to homestead land. Some settlers failed because their homesteads were too far from railroads and broad markets.[25] Vicinity to markets was particularly crucial in the years before extensive railroad networks reduced transportation costs. Others settlers failed because they did not anticipate the financial investment the "free" land required. One settlers' guide cautioned homesteaders against inflated expectations:

> Everybody should know that for this time of holding down a claim, he can as a rule make no money out of the land. The most he can do is to break up the ground and get ready for cultivation. This adds to the value of the claim, but

21 James Shortridge, *Peopling the Plains: Who Settled Where in Frontier Kansas* (Lawrence: University Press of Kansas, 1995), 85-87.
22 "Agricultural Research at KSAC Before 1887," Agriculture Experiment Station Bulletin 441, 7-17.
23 Homestead Act.
24 Gates, 238-242.
25 Ibid, 241.

> brings little or nothing into the pocket of the settler. He must have a living for himself and family in the meantime, and for this he must have money or run in debt, to be paid out of a loan he may be able to get after he has proved up on his land.[26]

For thousands of Kansas farmers, the risk and expense associated with homesteading paid off. By 1890, more than half of Kansas farms were on land acquired through federal land grants.[27] In addition to Homestead lands, Kansas farmers acquired their property through the purchase of school trust lands. Similar to railroad trust lands, school trust lands passed from the federal government to states, which used the proceeds from their sale for the establishment and maintenance of public schools.

On the heels of the Civil War, Kansas was poised for an agricultural and population explosion. During the war, town boosters had continued to lure new farmers with glowing reports, such as one that appeared in the *Junction City Union* in August 1863: "Our granaries are full to overflowing …. Millions of acres of the finest land on the continent lie open…"[28] By the time the war ended in 1865, the state's population had grown to 142,456.[29] Railroad companies had laid plans for transcontinental lines that would pass through the state; the Homestead Act and other federal legislation promised inexpensive land for new settlers; and technological advances promised to improve the ability to settle the drier unpopulated regions of the state. No longer strapped with military spending, the Kansas Legislature focused on domestic policies, among them encouraging farmers to further improve their properties. In 1867, they passed "An Act to Encourage the Growing of Hedge and Building of Stone Fences," which offered farmers $2 per year for each four rods of fence.[30] In the post-war years, as industrialization took hold in other regions of the nation and the percentage of American workers employed as farmers plummeted from 90 percent to 47.7 percent, Kansas was in position to take its place as the nation's breadbasket.[31]

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26 Copp, Henry N., The American Settler's Guide: A Popular Exposition on the Public Land System of the United States of America, 21st ed. (Washington DC, 1899), 11-12.
27 Gates, 240-241.
28 *Junction City Union*, 8 August 1863.
29 1865 Kansas State Census.
30 HP Plan, 43.
31 Barlow, 5.

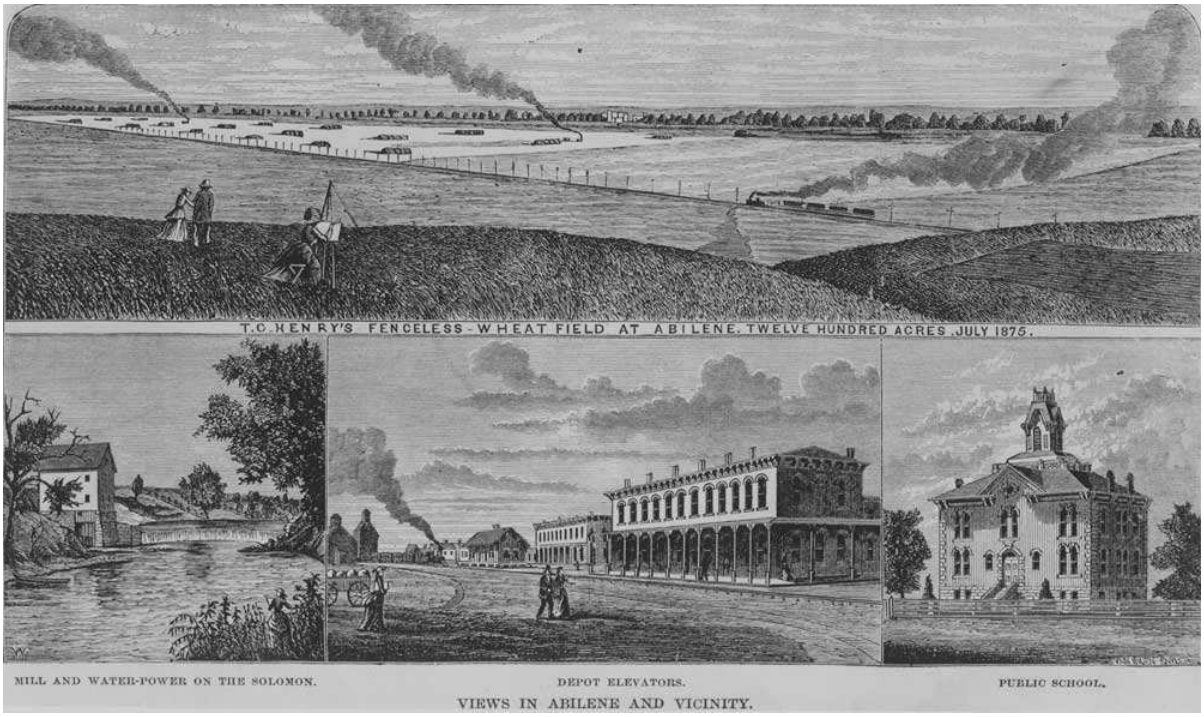

Figure 6: T. C. Henry's 1200-acre wheat farm, near Abilene (top). Notice the rail cars and steam.
Courtesy Kansas State Historical Society, kansasmemory.org.

Promised Land: Railroad, Immigration, Wheat and Cash in the 1870s

During the 1870s, Kansas evolved from a vast expanse of unbroken prairie to an agricultural powerhouse – from a series of small self-sustaining farms to a collection of increasingly sophisticated farm operations. By the end of the decade, approximately 90 percent of the state's population was living on farms;[32] the percentage of the state's acreage developed into farms jumped from 10.8 percent to 40.9 percent; and the number of Kansas farms increased from 38,202 to 138,561.[33] The Kansas Board of Agriculture reported that between 1866 and 1878 the state climbed from 25th to 4th in the production of corn, the state's first successful cash crop. During this time, Kansas also first rose to national dominance in wheat production, climbing from 24th to 1st nationally.[34]

32 HP Plan, 18
33 Kreek, 5.
34 O. Gene Clanton, "Kansas Populism" *Kansas Revisited* (Lawrence: University Press of Kansas, 1990), 202.

Two major factors contributed to the state's meteoric rise to farming power in the 1870s: railroad expansion and related strides in agricultural technology.

Railroads played a critical role in the state's development from the outset. In fact, historians argue that one of the driving forces behind the conception of the Kansas-Nebraska Act was Stephen Douglas's interest in a north-central route for the Transcontinental railroad, which would favor an alignment including his home state of Illinois and, thereby improve the value of his Chicago land holdings. To encourage the development of railroads in the new state, Congress awarded millions of acres in land grants to major rail lines, including the Atchison, Topeka and Santa Fe (ATSF, 2,944,788 acres), Kansas Pacific (KP, 3,925,791 acres) and Missouri Kansas and Texas (KATY, 705,623 acres). By 1870, railroads controlled one-fifth of the state's land.[35]

1860	100,000 pop	5 miles of RR
1870	360,000	1234
1880	990,000	3104
1890	1,420,000	8794[36]

The expanding railroad system set off an economic revolution. Farmers' grain markets expanded with the development of railroads in the state. By 1870, there 1234 miles of track, most lain by the state's two major lines the Union Pacific and Atchison, Topeka and Santa Fe.[37] In the first few years following the Civil War, rail lines reached the state's population centers – Manhattan, Topeka, Atchison, Leavenworth, Lawrence and Junction City.

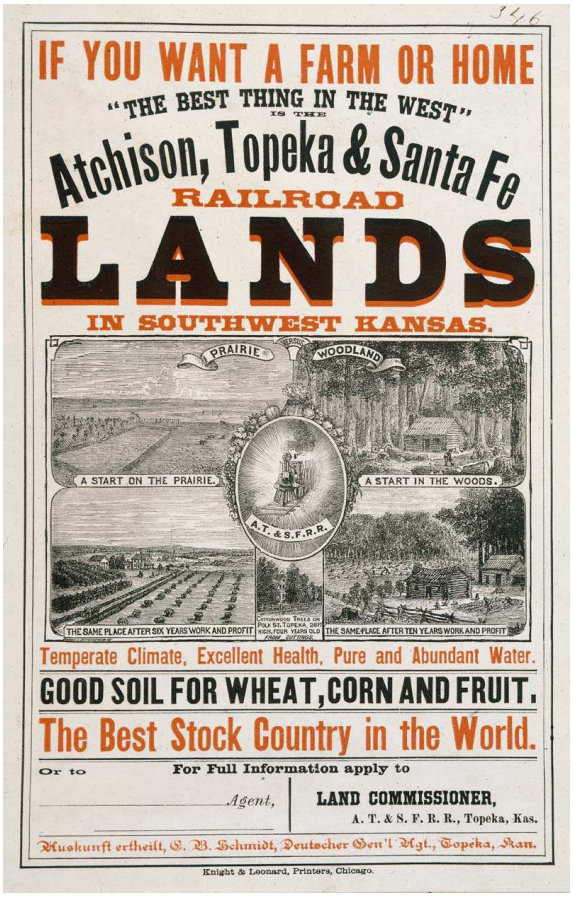

Figure 7: ATSF Promotional Bulletin. Courtesy Kansas State Historical Society, kansasmemory.org.

The railroads made possible the shipping west of increasingly advanced and efficient farm implements, and shipping east of farm products from grain to cattle, creating a broader market for farm products and shifting the farm economy from subsistence to cash crops, like corn and wheat. The cash earned for these crops improved farmers' ability to purchase new equipment, which in turn further improved efficiency and made farming more feasible in the arid western regions. By

35 Gates, 251-252.
36 HP Plan, 12.
37 Craig Miner, *Kansas: The History of the Sunflower State, 1854-2000* (Lawrence: University Press of Kansas, 2002), 103.

the 1870s, newly developed farm implements included listers, seated plows, and threshing machines. Advanced listers, which saved moisture by plowing and planting at the same time, allowed for cultivation in dryer climates. Although listers were available in the 1860s, newer models could plant two rows at one time. The implement earned the name "Lazy Man's Machine." Farmers began to trade their walking plows for seated plows, also known as sulkies. With the new seated plows, farmers could plow five to seven acres per day – as opposed to two acres per day with walking plows. In the early settlement years, farmers were forced to separate wheat stalks from grain by flailing by hand or grinding with stone rollers. Hand flailing produced seven bushels of wheat per day per laborer. New threshing machines, like Pitt's Threshing Machine, which was available beginning in the 1850s, could process 300 bushels per day using six horses.[38] As farmers moved west, they depended heavily on irrigation, aided by the first mass-produced windmills. As they turned their energy from subsistence to cash production, farm families began to rely more heavily on mass-produced goods and less on products they had produced themselves in previous decades.

Figure 8: Nicodemus in the 1880s. Courtesy Kansas State Historical Society, kansasmemory.org.

The economic success of the railroads depended not only on implement-aided production of cash crops, which the railroad shipped east for processing, but also on the state's population growth. Eager to sell its government-granted land, the railroads created a unique system for marketing Kansas farmland to immigrants. The ATSF's land agent, Carl B. Schmidt, was instrumental in attracting German-Russian Mennonites to ATSF lands. Schmidt, a native German speaker, had sold 100,000 acres of land to Mennonites by 1874. In 1875, he traveled to Russia to attract more Mennonite settlers. Most Mennonites settled on land purchased from the ATSF in South-central and Central Kansas , where they established agricultural villages.[39] Although Schmidt is best known as the "Moses of the Mennonites," he also attracted immigrants from Germany, where he traveled 37 times and convinced 60,000 people to immigrate Kansas.[40] Union Pacific land agents brought Catholic Volga Germans and Scandinavians to North-central and Northwest

38 Barlow, 70-71.
39 Shortridge, 103. *Global Anabaptist Mennonite Encyclopedia Online.* 1959. Global Anabaptist Mennonite Encyclopedia Online. Retrieved 17 July 2007 http://www.gameo.org/encyclopedia/contents/S35523.html)
40 Shortridge, 99.

Kansas. Volga Germans bought KP land in eastern Ellis County, where they, like the Mennonites, established agricultural villages.[41] The First Swedish Agricultural Company of Chicago bought 13,160 acres from the KP, on which they would establish the towns of Lindsborg and New Gottland. By 1885, Saline and McPherson counties boasted 45,000 Swedish natives, in addition to 80,000 first and second generation Swedes.[42]

Kansas also became home to emancipated slaves who found social conditions in the South after the withdrawal of reconstruction-era troops in 1877 intolerable. In the waning years of the 1870s, more than 15,000 blacks, known as Exodusters, left the South to create independent communities in Kansas. The best-known black farming community is Nicodemus, in Graham County. Like many Kansas pioneers, Exodusters lacked the capital necessary to farm the large tracts of land required to support a family on cash crops. Still, between the late 1870s and mid 1880s, these farms evolved from self-sustaining operations of less than 10 cultivated acres to 160-acre cash crop operations.[43] The state also continued to attract settlers from the Northwest, which had produced the state's first successful farmers. Between 1870 and 1880, Kansas became home to 215,000 who arrived from Ohio, Indiana, Illinois and Iowa.

Figure 9: A cartoon illustrating the devastating affects of the 1874 grasshopper plague. Courtesy Kansas State Historical Society, kansasmemory.org.

Railroads went to great lengths to prove the agricultural merit of their lands to potential buyers. The KP hired Richard Smith Elliott to oversee experimental farms at Wilson, Ellis and Pond Creek. Elliott propagated the now-infamous theory that "Rain Follows the Plow." Unfortunately, the conditions on the ground proved Elliott and other Kansas boosters wrong. The summer of 1874 was the driest on recent record - and the drought was followed by a grasshopper plague of biblical proportions. Grasshoppers descended on Kansas, eating crops, trees and clothes along a swath measuring 250 by 20 miles. The results were so devastating that the Kansas Legislature held a special session to discuss aid. Although the body authorized counties to issue bonds for farm relief, a private relief committee raised most of the assistance, $74,000. Two thousand residents of Smith County alone requested grasshopper relief funds.[44] The events wreaked havoc on the psyches of pioneer farmers, many of whom resorted to suicide. One Osborne County father killed himself after killing his child and attempting to murder his wife.[45] The months that followed offered little solace as the grasshopper plague was followed by a

41 Norman Saul, "Myth and History: Turkey Red Wheat and the 'Kansas Miracle', *Kansas Revisited*, 143.
42 Shortridge, 106.
43 Nicodemus is now a National Park Service Historic Site. See http://www.nps.gov/archeology/sites/npSites/nicodemus.htm.
44 Craig Miner, *West of Wichita: Settling the High Plains of Kansas, 1865-1890* (Lawrence: University Press of Kansas, 1986), 52-55.
45 Ibid, 54, 161.

difficult winter. By the end of the year, 6,000 U. S. banks had failed.[46]

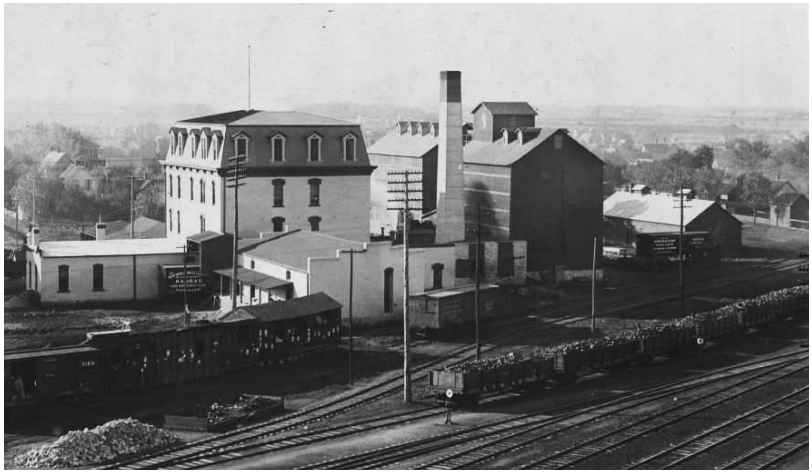

Figure 10: Bernhard Warkentin's Newton Milling and Elevator Company, Newton, Kansas. Courtesy Kansas State Historical Society, kansasmemory.org.

Ironically, the 1874 grasshopper plague drove the state's farmers to a safer alternative – wheat. By the time the grasshoppers destroyed the Kansas corn crop in 1874, the wheat had already been harvested. First planted in at the Shawnee Methodist Mission in 1839, wheat became a staple in the 1870s as settlers moved into Central Kansas, which was particularly well suited to the crop.[47] In 1870, there were 156,200 acres of wheat planted in Kansas. In 1885, there were 2,290,549 acres of wheat.[48] The wheat boom drove a milling boom. In 1874, there were 80 water-powered mills and 59 steam-powered mills in the state.[49] By 1885, there were 400 mills.[50] Hard winter wheat took hold with the development of steel roller mill technology, which eased its processing.

In part due to immigration of residents from a wide range of ethnic and cultural backgrounds, the state's population grew exponentially, from 107,206 in 1860 to 996,096 in 1880.[51] The railroad's arrival marked a formative period in Kansas history, which caused an explosion in immigration, opened new parts of the state to settlement, and encouraged the cultivation and milling of wheat.

The Best and Worst of Times: Ranching, Diversification and Drought in the 1880s

At the end of the 1870s, a decade marked by devastating drought and grasshopper plagues, agricultural experts warned Kansas farmers to diversify. Farmers could reduce risk of financial ruin by raising multiple crops and livestock. Some failed to heed the alarms. Although many advised that the southwest Kansas climate was not suitable for farming, others aimed

46 Nell Irvin Painter, *Standing at Armageddon: The United States 1877-1919* (New York: WW Norton and Co, 1987), xxxix.
47 HP Plan, 65.
48 Malin, *Winter Wheat.*
49 US National Youth Administration, Kansas, *Study of the Milling Industry in Kansas* (Topeka, 1938-39), 24. Kansas State University Special Collections.
50 US National Youth Administration, 31-32.
51 Gates, 244.

to conquer the arid land with improved implements and advanced irrigation systems. Although the 1880s were a time of agricultural exploration, Kansas farmers soon learned that neither technology nor diversification could shield farmers from harsh climates and natural disasters.

Farmers like Abilene's J. W. Robson argued that diversified farms could have better weathered the hardships of the 1870s:

> Agricultural booms, and specialties, [have] been our bane in this State of Kansas. Had every settler in Kansas located on a 160-acre farm been satisfied with eighty acres of arable land, and this planted with various crops, leaving the remaining eighty acres in native grass, for the pasturage of cattle and sheep, we would have been in a sound financial condition today, and our families would have been living in comfort and luxury. [But] Ah, friend Henry, that terrible epidemic "wheat on the brain" prostrated the farmer financially, and blasted his hopes. . . . . [52]

Over-production of Kansas wheat had driven down wheat prices to lows not seen for forty years. In England, the prices reached a 100-year record low.[53]

Figure 11: Irrigation Ditch Near Englewood, Kansas. Courtesy Kansas State Historical Society, kansasmemory.org.

Although farmers planted the majority of their acres in corn and wheat, they also added other crops, such as soybeans,
alfalfa, sugar beets and grain sorghum (also known as "milo").[54] Between 1880 and 1890, the number of Kansas farms grew from 138,561 to 166,617, and the percentage of the state's land under cultivation expanded from 40.9 percent to 57.7 percent.[55] In a three-year period ending in 1888, the state's population increased 20 percent.[56] Farmers continued to benefit from improvements in agricultural implements and built their knowledge from the growing scientific agricultural research. Before the 1880s, the principal purveyors of published farming data were the railroads, who had an interest in embellishing their findings to improve sales of trust lands.

52 JW Robson, *Abilene Chronicle*. Malin, 89.
53 W. A. Peffer, *The Farmer's Side: His Troubles and Their Remedy* (New York: D. Appleton and Company, 1891), 154.
54 Richmond, 154.
55 Kreek, 5.
56 Miner, *Kansas*, 146.

In the 1880s, the Kansas State Agricultural College (KSAC) became a trusted source of scientific data. Although the college was founded in 1862, it lacked the funds necessary to give students and faculty hands-on farming experience and undertake agricultural experiments. The Hatch Act, enacted 1887, authorized $15,000 per year to each state for the purpose of establishing agricultural experiment stations at land-grant colleges for conducting physiological research on plants and animals. One condition of the funds was that the experiment stations publish quarterly bulletins to report their findings. These bulletins provided farmers guidance on purchasing farm implements and equipment, building the most efficient buildings for various activities, feeding, marketing, production, and even housing.[57]

Figure 12: Western Kansas Ranchers with their cattle herd, horses and buggies. Courtesy Kansas State Historical Society, kansasmemory.org.

But the lessons learned by decades of eastern Kansas farmers did not apply to the western regions, which first opened up to farmers in the 1880s. Farmers bought property in southwest Kansas, formerly reserved for cattle driving and bison hunts. To attract farmers and assuage concerns about the arid climate, town boosters invested millions in irrigation systems and wells. Soon arid towns were naming themselves "Garden City" and "Greensburg" in hopes of attracting investors and farmers. In the 1880s, boosters like C. J. (Buffalo) Jones, built more than 400 miles of canals and ditches in the Garden City area alone. The canals were 30-40 feet wide and 5-10 feet deep.[58] Later, Western Kansas farmers relied upon deep wells, which, like that in Greensburg, were dug by hand until steam and horsepower drills were available in the mid 1880s.[59] To pump water from these deep wells, farmers in dry regions relied upon windmills, whose manufacture was a $2 million business by 1889.[60] In 1884, Garden City was home to 1569 residents and there were 2905 acres of Finney

57 "Agricultural Research at KSAC Before 1887," *Agriculture Experiment Station*, Bulletin 441.
58 (Miner, West, 179, I-42)(The Great Eastern and Farmers' Ditches of Finney County v. 26, no. 5 (Sept/Oct 2004), p. 5)
59 HP Plan, 42.
60 Barlow, 87.

County land under cultivation.[61] By 1887, Finney County's population had exploded to an estimated 10,000.

Figure 13: Branding Cattle at the Garst Ranch South of Coldwater, ca. 1900. Courtesy Kansas State Historical Society, kansasmemory.org.

Areas that had not been settled by farmers by the 1880s became cattle-ranching centers. Between 1860 and 1880, the number of cattle in the state had ballooned from 93,000 to 1.5 million.[62] The Kansas ranching industry commenced in earnest in the years immediately following the Civil War. In 1867, Joseph McCoy opened his famed stockyard in Abilene, inaugurating the cowtown era in which cowboys drove Texas longhorns from the overpopulated South to Kansas railheads. Soon, cattlemen began fattening their herds in Kansas over the winter before shipping them out of Abilene in the spring.[63] Corporations, like the Santa Rita Land and Mining Company of Arizona, leased grazing pastures from spring to fall. On rich native grasses, cattle gained two to three pounds per day.[64] During the 1880s, ranchers employed new techniques for feeding their stock in winter. These included the first use of silage, a system for preserving fodder through partial fermentation. A USDA study found that only 99 farmers nationwide had silos in 1882.[65] By the end of the decade, many farmers and ranchers had adopted the practice. Others came to rely more heavily on hay, which could be easily stored for the first time using the first mass-produced mechanized hay presses, first available to a broad market in the 1880s.[66]

As an increasing number of cultivated fields came to be surrounded by ranchland, farmers demanded herd laws to protect crops

61 *History of Finney County*, 9.
62 Wood, xi,xii.
63 Skeen, 44-45.
64 Skeen, 47-51.
65 Barlow, 75.
66 Barlow, 68.

from trampling by grazing herds and to protect domestic livestock from disease. Over a period of two decades, counties adopted such laws. Eventually, the quarantine line stretched west to Dodge City, whose cowtown days lingered until 1885. The cattle-driving era proved that the Kansas grasslands were well suited for grazing and ranching. Soon, Kansans were raising shorthorn cattle, Herefords, Angus and sheep.[67] Where herd laws prevented open grazing, ranchers inexpensively fenced in their land with barbed wire, available by the late 1870s, stretched between post rocks or hedge posts.

Many eastern investors were lured to the West by propaganda pieces like James Brisbin's 1881 book *The Beef Bonanza: or, How to Get Rich on the Plains. Being a Description of Cattle-Growing, Sheep Farming, Horse-Raising and Dairying in the West*. The railroads, which owned a million acres of trust lands in the Flint Hills alone, joined the throng.[68] In the end, the Flint Hills region, an area stretching from near the state's northern border to its southern border roughly bounded on the east and west by Topeka and Salina, proved well suited for ranching. Because the stony ground was difficult to clear and cultivate, the county attracted few farmers. As a result, the area was late in passing herd laws. The proliferate native grasses and recently acquired railroad access to eastern markets made the area ripe for ranching in the late 1870s and early 1880s.

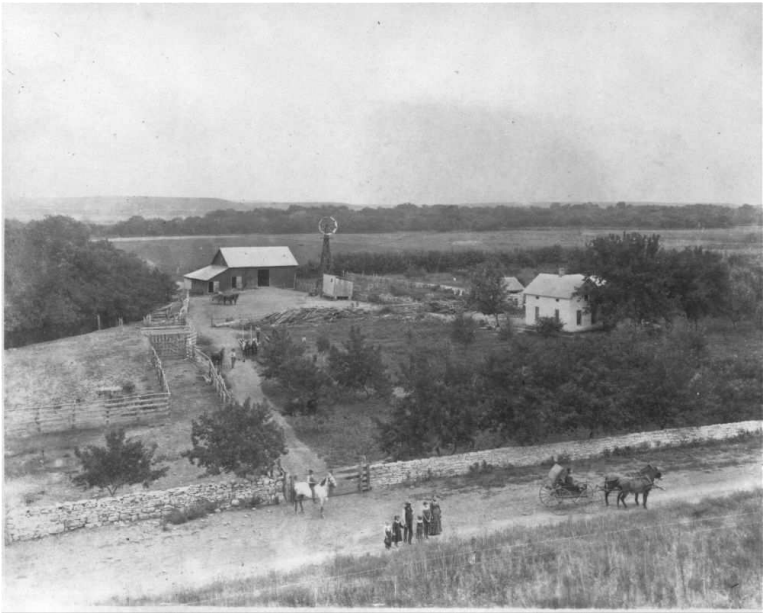

Figure 14: The Rogler Ranch, Chase County, ca. 1880s. Courtesy Kansas State Historical Society, kansasmemory.org.

Ranching required significant capital investment relative to small pioneer subsistence farms. Large-scale Chase County investors included Barney Lantry, who arrived in 1877, and Stephen Jones, who came in 1878. Lantry's first commercial success came in stone quarrying and construction business. He later invested his profits in ranching. Stephen Jones left Colorado to begin a commercial grazing operation in the Flint Hills. Jones purchased his first 160 acres, the center of what would become his Spring Hill Ranch, in 1878 for $2000. Over the years, he expanded his holdings to 7000 acres by buying adjacent farmsteads and enclosing them with stone fence. By 1885, the Spring Hill Ranch was valued at $150,000.
In 1888, Jones sold the ranch for $95,000 to his neighbor Barney Lantry. By the time of Lantry's death in 1895, he had amassed 15,000 acres of Chase

67 Skeen, 56.
68 Skeen, 30-31.

County ranchland.[69] Massive ranching operations, like those in Chase County, required complexes of buildings, including headquarter houses, bunkhouses, barns, feed lots, corrals, springhouses, privies, icehouses, loafing sheds, and windmills.

While the tallgrass prairie was being developed by cattle ranchers, investors eyed the shortgrass prairie for sheep ranching. Among the more successful sheep ranches during the 1880s and 1890s was the Cottonwood Ranch in Sheridan County, established by British immigrant John Fenton Pratt in 1880. By 1892, Pratt's holdings included 1580 sheep. In May 1891, Pratt sold 3400 pounds of wool to one client alone.[70]

Although both the Spring Hill and Cottonwood Ranches survived into the Twentieth Century, many farms and ranches were not as fortunate. An 1884 fire destroyed parts of seven Kansas counties.[71] Just two years later, the legendary Blizzard of 1886 wreaked havoc on the Kansas prairie. The snow fell and blew for forty hours, stranding those caught in its wake for up to two months. The storm took the lives of some western pioneers and wiped out an estimated 75 percent of cattle in ranching counties. As a consequence of these natural disasters, many ranches went bankrupt. Railroad over-expansion and foreclosure on mortgaged farm and ranch property also impacted Kansas communities, particularly county seats which relied heavily on agriculture-related trade. Stricken with blizzards, drought and foreclosure, farmers fled western Kansas. Between 1887 and 1891, the population of ranching center Finney County plummeted from an estimated 10,000 to 5294.[72]

During the 1880s, the Kansas farm economy diversified. As rail networks became more sophisticated and northeasterners acquired a taste for beef, investors bought up Kansas rangeland for large-scale ranching operations. Other capitalists constructed or sold shares for mass irrigation networks in an attempt to market arid parts of the state to farmers. Despite these attempts to tame the prairie, drought and blizzards continued to drive many farmers into bankruptcy.

Less Corn and More Hell: Kansas Populism in the 1890s

The real estate bust, railroad overexpansion and erratic weather all contributed to a statewide economic downturn followed by a nationwide recession. During the 1870s and 1880s, farmers had invested in new equipment. Advanced farm implements made them more productive, so they invested in more land, mostly with credit. Two-thirds of all US mortgages were on farms.[73] Soon, however, high yields and high production caused prices to fall. In 1890, the Kansas Secretary of Agriculture reported that farmers spent 21 cents to produce a bushel of corn. The average corn price was 15 cents.[74]

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69 National Park Service, Tallgrass Prairie National Preserve, Cultural Landscape Report, Phase 2, 53-72.
70 http://www.kshs.org/places/cottonwood/tour3.htm#shearing accessed 8/12/07.
71 Miner, *West of Wichita*, 163.
72 Ibid, 212.
73 Gates 240.
74 Peffer, 27-28.

According to one study, 63 percent of Kansas farmers were operating at a loss.[75] In good years, farmers had shifted from subsistence to the production of cash-crops, particularly wheat. By the time the bad years came, farmers had come to rely on cash to trade for goods they historically would have produced themselves. Put simply, they sold their fruit and bought it back in cans. Unable to make mortgage payments and without the cash to buy necessities, many farmers could not ride out the storm. By 1890, a third of Kansas farmers no longer owned the ground they tilled.[76] As farmers, suddenly a minority, defaulted on mortgages, they became increasingly suspicious of the rising professional class of industrial capitalists and bankers who seemed to be making more off their farms than they did. An agrarian revolt, known as the Populist Movement, ensued – and activists like attorney Mary Elizabeth Lease were advising farmers to "raise less corn and more hell."

Kansas editor William Peffer, who chaired the organizing conference of the national People's Party, led the charge on the political front. In an 1890 tome entitled *The Farmer's Side: His Troubles and Their Remedy*, Peffer argued that "the men and women who do manual work are growing relatively poorer, and the few who live off of the profits of other men's labor, or off the interest on money … are growing richer." The populists pushed for government regulations on railroads and banks and democratization of finance. Peffer fanned the flames with copious statistics drawn from a broad range of sources. During a six-month period in 1890, according to the *Topeka Daily Capital*, there was an average of 25 mortgage foreclosures per county in Kansas. In 1890, farmers controlled less than 25 percent of the nation's wealth, but paid 80 percent of the nation's taxes. One half of the nation's wealth was controlled by fewer than 250,000 citizens, none of whom were farmers. A Harvey County census taker calculated that farm families there averaged 17 2/3 cents per day per person, 40 percent of what the state spent to provide for imprisoned convicts.[77]

Figure 15: Populist Senator William Peffer. Courtesy Kansas State Historical Society, kansasmemory.org.

The tumultuous events sent Peffer to the US Senate and sent farm families packing. During the worst years, the state's population plunged by 11 percent.[78] The Populist's worst fears were realized when much of the foreclosed property fell into the hands of bankers, like Sumner County's John T. Stewart, who would make record profits operating large corporate farms at the turn of

75 Ibid, 34.
76 HP Plan, 13.
77 Peffer, 9-37.
78 Miner, *Kansas*, 149-150.

the century.[79]

Although Populism was a short-lived political movement, it managed to precipitate long-term reforms. An adjustment in freight rates precipitated a statewide boost in milling. Before the 1890s, it was cheaper to ship unprocessed grain east than to ship processed flour.[80] More Kansas wheat was being milled within the state, sometimes in milling facilities near grain elevators, which first came on to the scene when farmers established cooperatives to maximize prices for farm commodities. In 1890, populist candidates won 96 of the 125 seats in the Kansas House of Representatives and five of the state's seven congressional seats.[81] The state legislature managed to pass state bank regulations, an 8-hour work day for government employees, provisions for fair grain inspection and weighing, and an irrigation bill.[82] Although many of these successes were overshadowed by the Legislative War of 1893, they soon became incorporated into the platforms of the major parties. *Emporia Gazette* editor William Allen White famously exclaimed that the state's early Twentieth-Century Progressive Republicans were simply Populists with clean shirts.[83]

The 1890s were a time of transition. For the first time in Kansas farming, harder work did not result in a better quality of life. The more farmers produced, the lower prices fell. This theme would repeat again during future periods of adjustment, particularly in the years following ramped-up wartime production.

Figure 16: A Reeves Steam Tractor plowing virgin prairie. Courtesy Kansas State Historical Society, kansasmemory.org.

The Golden Age: Farming in the Progressive Era, 1900-1920

Following the market corrections of the 1890s, the United States entered a period of prosperity and reform. International demand for wheat and other cash crops provided farmers the expendable income necessary to purchase tractors and cars, which improved both production and market access. Rising crop prices also allowed farmers to enhance their standard of living and the safety of farm goods through improvements to both homes and outbuildings. The good times caused many farmers to

79"Sumner Co. Had Largest Wheat Producers in World, '01" *Caldwell News,* 3 Oct 1901.
80 US Natoinal Youth Administration, 33.
81 Miner, *Kansas*, 174.
82 Ibid, 180-182.
83 Ibid, 202.

once again over-extend their financial resources, mortgaging their futures on the false hope of continued prosperity.

Figure 17: Kansas Agriculture Secretary FB Colburn standing in front of Kansas corn, ca. 1900. Courtesy Kansas State Historical Society, kansasmemory.org.

The first two decades of the Twentieth Century came to be called the "Golden Age of Agriculture." During those years, American farms tripled in value and doubled in gross income. In 1900, there were 5.7 million farms in the United States with an average size of 138 acres.[84] By 1920, there were 6.5 million farms with an average size of 148 acres.[85]

In Kansas, the number of farm acres increased nearly four million acres between 1900 and 1920. In 1900, there were still two million acres of unsettled Kansas land, mostly in the northwest and southwest regions.[86] Settlement of Northwest Kansas began in earnest at the turn of the century, with homesteaders filing for more than 1900 acres in 1909 alone. The 1915 dissolution of the Kansas National Forest Reserve opened up 300,000 acres southwest of Garden City.[87] By 1919, 86.8 percent of the state's land was in farms.[88]

Kansas continued to make strides in the production of cash crops, including corn, wheat, sorghum and broom corn. Between 1900 and 1919, the state's annual wheat production averaged more than 89 million bushels. The Great War created a worldwide demand for American wheat, driving up wheat prices for Kansas farmers. The United States produced for Europe, where the majority of farmers were engaged in the war. Demand was high, supply was low, and prices were good. Propaganda posters urged Americans to save wheat:

84 1900 US Census, *Farm Population of the United States*.
85 1920 US Census, *Farm Population of the United States*.
86 HP Plan, 5.
87 HP Plan, 5.
88 Call, 9.

"Will you help the Women of France? Save Wheat"
"They are Giving All. Will you send them Wheat?"
"Eat less Wheat … Send more to Europe or they will Starve."

Kansas farmers answered the call to supply more wheat for war-torn Europe, producing more than 100 million bushels more than any other state during the war years and, one year, one-fifth of the nation's wheat crop. In 1919, the state was also the nation's top alfalfa producer. It was 6th in number of acres planted in corn - and Liberal, Kansas was one of the world's largest broom corn markets.[89]

Figure 18: Threshing Crew in Western Kansas, ca. 1910s. Courtesy Kansas State Historical Society, kansasmemory.org.

As in the Civil War, farmers relied on new labor-saving technology to address labor shortages and increase production. Although the number of cultivated acres in Kansas continued to increase, the number of farms dropped for the first time in the state's history, falling by 12,555 between 1910 and 1920 alone. There were fewer farms – but larger farms. The average size of a Kansas farm during the first two decades of the century was nearly double the national average, rising from 241 acres in 1900 to 275 in 1920.

The principal contributor to this significant economic shift was the revolutionary self-propelled tractor. In the early years of the Twentieth Century, only large producers with

89 Call 13-16.

a great deal of capital could afford the large tractors on the market. By the 1910s, more affordable tractors were available to smaller farmers. Between 1915 and 1920, the number of tractors in use in Kansas jumped from 2493 to more than 14,000.[90] In 1914, it took an average of 106 man-hours to produce 100 bushels of wheat. By 1921, the time was halved.[91] Before the US entered World War I, some farming experts were still skeptical about the tractor's merits. In 1916, F. B. Coburn, a former Kansas Secretary of Agriculture, published a compilation of pointers from various publications that included contradictory predictions about horses and tractors.[92] Most sources argued that tractors would not replace horses, but simply augment them:

> Horses, Not Tractors – "The average farmer knows little about machinery and by the time he becomes familiar with one machine it is out of date. Better play it safe and get a few good draft horses."[93]
>
> The Big Tractor – **"**The 'horseless age' is just about as far off as the 'millennium.' We must recognize the fact, however, that another form of motive power has come to stay. The big tractor has its field. It serves a purpose on the big wheat farms where capacity for work is an item. Today, the tractor is entering a new field. The small farmer – the farmer of diversified interests, is now looking for another form of motive power. The tractor for the place has been developed. The machine that will develop twenty to thirty horsepower at the belt and five to seven at the draw bar seems well suited to the needs of the diversified farm. This machine will do the plowing, prepare the seed bed, seeding the crops and also run silage cutters and grinders, threshing machine and do the hauling to market. We believe in the 'right tractor' on the 'right farm.'"[94]
>
> Tractor – "The tractor is not apt to displace horses, but it will supplement and assist them. The farmer who has been obliged to keep extra horses the year around for the sake of a few months of labor at a critical time will find that the tractor is a real godsend. The day will come when both horses and a tractor to supplement their labors will be indispensable for every well equipped farm. Each in its own place will fill a want and aid the farmer is doing his work better, quicker and more thoroughly."[95]

By 1920, the skepticism had worn off. Many farmers used their proceeds from record-high wartime wheat prices to buy tractors, including International Harvester's widely popular Farmall Tractor, which could pull increasingly sophisticated implements. The Farmall tractor, first sold in 1924, was the first low-priced tractor designed for the cultivation of row crops and

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90 KP Plan, 33.
91 Ibid.
92 FB Coburn, *Farmographs: A Collection of the Best Experience, Observations and Advice for Solution of Problems of Farm Life.* (St. Joseph, MO: The News-Press, 1916).
93 Bert Lowe, *Capper's Weekly*, Coburn, 282-283.
94 *Orange Judd Farmer* , Coburn, 43-44.
95 *Idaho Farmer*, Coburn, 52-53.

could pull general fieldwork implements. Horse-drawn farm implements could be modified to attach to the Farmall – or farmers could purchase standardized implements from International Harvester or Sears or Montgomery Ward catalogs. By 1932, International Harvester had sold 135,000 Farmall tractors.[96] When it introduced the Farmall Tractor, International Harvester had been in Kansas for decades, building a facility in Wichita in 1910, when its annual sales exceeded $100 million.

Among the newly available implements were combines, which combined the process of harvesting and threshing wheat. Before the advent of gasoline engines, combines were pulled by teams of horses or steam engines. In 1912, a Wichita man developed a prairie type model. In the early years, many implements dealers invested in combines and began the first custom cutting crews. Between 1919 and 1920 alone, Kansas farmers bought 1500 combines. By 1923, the first self-propelled models, which could harvest wheat four times faster than earlier equipment, were in use near Hutchinson.[97] When a smaller more affordable combine was introduced in 1926, many farmers purchased it to harvest wheat, sorghum and milo. By 1930, 27,000 of the nation's 75,000 combines were in Kansas.[98]

Figure 19: Harvesting Wheat in Russell County, ca. 1920s. Courtesty Kansas State Historical Society, kansasmemory.org.

Tractors contributed to overproduction in two ways – first by directly improving production, and secondly by freeing up acres for cash production formerly used to feed farm animals such as horses and mules.[99] Farmers were reticent to replace draft animals altogether. Many relied upon horses and horse-powered pulleys and machines until the mid Twentieth Century. Still, overinvestment in gasoline-powered machines left many Kansas farmers particularly prone to crashing prices of the 1920s.

96 Barlow, 122.
97 Topics in Kansas History, kshs.org.
98 Thomas Isern, *Custom Combining on the Great Plains* (Norman: University of Oklahoma Press, 1981), 13-15.
99 Manhattan, Kansas Chamber of Commerce. *Riley County, Kansas: The Story of Its Agriculture*. Manhattan, 1936, 12.

Although the state's population jumped from 1,470,499 in 1900 to 1,769,257 in 1920, the farm population declined. As the western regions opened up for settlement, the state's urban centers drew a growing number of people. Between 1900 and 1920, Wichita's population tripled, from 24,671 to 72,217. Kansas City, Kansas's population doubled from 51,418 to 101,177. And Topeka's population grew from 33,608 to 50,022. Growth in metropolitan areas, most of them in the eastern half of the state, counterbalanced any population growth in western Kansas. The state's geographical population center, which stood at the Marion and Chase county line, did not change between 1900 and 1920.[100]

Figure 20: The Adolph Duever Dairy Farm near Bremen, ca. 1929. Courtesy Kansas State Historical Society, kansasmemory.org.

But Kansas was still an agricultural state. Although fewer Kansans lived on farms, many of the growing number of urban dwellers were employed in agriculture-related industry. Wichita and Kansas City were livestock centers. The Kansas Stock Yards Company in Kansas City was founded 1871. In 1909-1910, the Kansas City Livestock Company constructed the world's largest livestock exchange building, where it routinely set records for the number of cattle it processed. By 1920, Kansas ranked second in the nation for meat packing profits, bringing in $165 million per year.[101]

The state's wheat dominance drove wheat trading and milling activity in large cities. In 1892, Topeka was the nation's second-largest milling center.[102] Between 1890 and 1895, Wichita was the "greatest wagon wheat market in the United States." As the railroad network reached the nearby rural communities, Wichita became a wholesale wheat-trading center. In 1903, fourteen Wichitans founded the Wichita Board of Trade, the state's first grain exchange. Between 1910 and 1916, the receipts from

100 Fourteenth Census of the United States, 1920, *Center of Population and Median Lines and Centers of Area, Agriculture, Manufactures, and Cotton*, 19.
101 Kansas City Stock Yards Company. *75 Years of Kansas City Livestock Market History, 1871-1946. With Which Is Combined The 75th Annual Livestock Report for Year Ending December 31, 1945*. Kansas City: Kansas City Stock Yards Company, 1946), 12, 23.
102 Miner, *Kansas*, 340.

Board of Trade members had ballooned from 6,874 to 19,783 car lots. Before the turn of the century, most Kansas wheat was shipped out of state for milling because wheat was cheaper to ship than flour. However, freight regulation adjustments in 1892 created a niche for milling in Kansas.[103] By 1928, Wichita was the fifth-largest milling market in the United States (after Minneapolis, Buffalo, Kansas City and Portland, Oregon). Kansas ranked third among the states in milling - and grain executives amassed small fortunes.[104]

Other agriculture-related industries also took hold in cities. Wichita's Warehouse and Jobbers district included industries ranging from broom corn processing firms to ag implements manufacturers like Rumely.[105] Smaller cities also saw an influx of agriculture-related industries. The Kansas Legislature subsidized the state's sugar beet industry beginning in 1901. By 1920, Garden City's sugar beet factory, manned mostly by Mexican immigrants, was the largest employer in the city.[106]

A new agricultural business, the dairy industry, took root during the first two decades of the Twentieth Century. Before the late Nineteenth Century, dairy was a cottage industry. Farmers produced milk principally for the consumption of their own families. Because it was difficult to transport, milk had a limited market. As the United States became increasingly urbanized and industrialists made advances in refrigeration, the markets for dairy products expanded. Like that of many agricultural businesses, dairy farming was industrialized, with a new class of mechanized dairy farms supplying a growing number of ice cream factories and creameries in cities. Among the state's successful ice cream and milk sellers was Wichita's Steffen's Company. The company was founded by Nick Steffen, who began making ice cream at his Wichita bakery in 1882. Steffen partnered with William Bretch in 1898 to buy the Citizens Ice Cream and Cold Storage Company. Steffen sold his bakery and the pair built an ice cream plant. In 1931, the booming company built a new Art Deco facility.[107]

From 1910-1920, the state's dairy production increased 300 percent.[108] The demand for a newly imported breed of cows, Holsteins, grew. Holstein, known for producing more milk than other dairy breeds, were first imported to Massachusetts from Holland in 1852. The majority of the first generation of Holsteins was brought to the United States between 1869 and 1885, when dairy farmers formed the Holstein-Friesian Association of America.[109]

Carrying farm products like wheat and milk to town for processing was eased by the development of good roads. Farm publications and newspapers sought the support of Kansas farmers in a statewide good roads movement, which pushed for

103 US National Youth Administration, 33.
104 A. E. Janzen, "The Wichita Grain Market," Kansas Studies in Business, (Lawrence, Kansas: School of Business, no. 8, June 1928).
105 Pamela D. Kingsbury, "Wichita Warehouse and Jobbers District," National Register nomination.
106 Henry J. Avila, "The History of Mexican American Migration in Southwestern Kansas," *Kansas History*, Spring 1997.
107 *Wichita Eagle*, 3 Sept 1931.
108 Call, 18.
109 From the Holstein Association of America, http://www.holsteinusa.com/html/thecow1.html.

an amendment to the state's constitution to shift road maintenance of some roads from counties to the state. These publications argued that good roads improved the resale value of farms they passed, decreased costs of transporting goods to market, and lessened travel time to and from school for farm kids. In addition, good roads would ensure the continuation of Rural Free Delivery (RFD) of mail, first instituted by the US Postal Service in 1896.[110] Early on, many farmers were generally opposed to the movement, which they perceived as promoting urban encroachment. However, most came to support the effort as a way of ensuring rural mail delivery and access to markets.

During the first two decades of the Twentieth Century farm prices increased, enabling Kansas farmers to make significant capital improvements and investments in farm capital, including tractors and other implements. Unfortunately the Golden Age of Agriculture came to an abrupt end after World War I when prices for farm goods plummeted.

Down and Out: Farming the Great Depression, 1920-1941

As mechanization made farmers more efficient, fewer farmers were necessary to meet the market demands. By 1920, only 30 percent of Americans lived on farms.[111] Between 1919 and 1927, four million Americans had left their farms, many of them moving to increasingly industrialized cities.[112] Another six million Americans left farms between 1929 and 1945. In 1930, only two percent of farmers in the Great Plains were self sufficient, leaving the vast majority of farmers particularly vulnerable to market shifts.[113] Many sold out to a growing number of corporate farms.[114] Those who hung on were left to endure the worst farming conditions in U. S. history. The new breed of entrepreneurial family farmers, laden with larger farms, larger capital investment, and larger debt, found it difficult to weather the storm.

Figure 21: Farmer shoveling his implement out of the dust (above). Abandoned Corn Field, Barber County, 1934 (below. Courtesy Kansas State Historical Society, kansasmemory.org.

110 Paul Sutter, "Paved with Good Intentions: Good Roads, the Automobile, and the Rhetoric of Rural Improvement in the *Kansas Farmer*, 1890–1914 *Kansas History: A Journal of the Central Plains* 18 (4) (Winter 1995–1996), 284–299.
111 1920 US Census.
112 Miner, *Kansas*, 284.
113 Michael Johnston Grant, *Down and Out on the Family Farm: Rural Rehabilitation in the Great Plains, 1929-1945* (Lincoln: U of Nebraska Press, 2002), 5.
114 Miner, *Kansas*, 284-286.

Signs of the impending nationwide depression to come were evident in farm markets long before the 1929 stock market crash. As early as 1926, the USDA was reporting widespread soil depletion in Kansas.[115] Farmers who had seen record crop prices during the Great War witnessed a collapse during the 1920s. But Kansas farmers kept expanding their operations, producing 25 percent of the nation's wheat by 1930.[116] By 1932, the price of wheat fell as low as twenty-five cents per bushel. [117] This left farmers strapped for cash needed to make payments on their capital investments and to purchase other goods they were no longer producing on the farm. During his tenure as Secretary of Commerce from 1921 to 1928, Herbert Hoover bemoaned the farming slump, recommending that farmers diversify their crops and take some areas out of production to bring agriculture in line with the industrialized economy. Although the Federal Farm Board, which Hoover created in the first year of his presidency (1929), bought up surplus grain, it proved too little too late.[118]

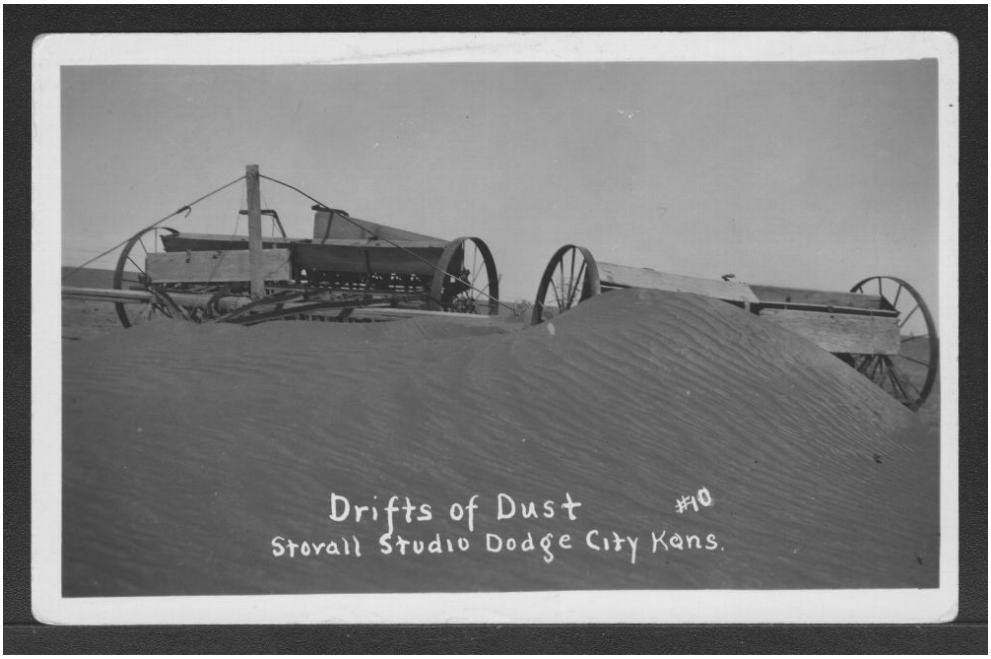

Figure 22: Dust drifts near Dodge City, 1935. Courtesy Kansas State Historical Society, kansasmemory.org.

Many politicians and farmers blamed the troubles on an increase in farm tenancy. During the 1920s, 40 percent of all farmers rented their land. Although the percentage of farm tenants declined nationwide during the 1930s, it grew in the Great Plains where, by 1940, almost half of all farmers rented the land they tilled. Kansas Governor Henry J. Allen dubbed the growing number of absentee landlords "land hogs."[119] Some saw tenancy as a way for hard-working men without land to enter farming. But the days when any many could "pull himself up from his bootstraps" to make a comfortable living in farming were over. R.

115 Grant, *Down and Out*, 48.
116 Miner, *Kansas*, 286.
117 *Wichita Beacon*, 5 December 1937, 7.
118 Grant, *Down and Out,* 62-66.
119 Ibid, 39-40.

H. Burch, who rented a 480-acre farm near Haviland for ten years, had nothing to show for his efforts.[120] Unlike Burch, most tenants leased land for only a year at a time. These farmers, some argued, had no interest in the land they farmed. Their only goal was to squeeze as much profit as possible, leaving depleted soil for the next tenant. In 1926, the USDA reported that one-third of rented farms suffered from decreased soil fertility.[121] The tenancy problem became a presidential campaign issue for Kansan Alf Landon, who stated that "the stability of civilization depends upon the ownership of the land by the man who works the land."[122]

Some also blamed the farm tenancy problem for the dust bowl. Already suffering from low crop prices and massive debt, farmers faced an unpredictable wrath touched off by drought in the early 1930s. The drought precipitated the dust storms, which ruined any crops the drought may have left in its wake. Hoards of grasshoppers ate whatever vegetable matter remained. Central and western Kansas counties were the hardest hit, with the dust blowing west to east. The best known of the storms wreaked their havoc on March 15, 1935, "Black Friday," and April 14, 1935, "Black Sunday."

Figure 23: 1937 Shelterbelt Project, Reno County. Courtesy Kansas State Historical Society, kansasmemory.org.

Following the storm, farmers were left to shovel implements out from under dust drifts. According to Wichita State University's Geology Department, the dust storms brought five million tons of dust to the atmosphere over Wichita.[123] It is estimated that 850 million tons of topsoil had blown off the southern plains by December 1935.

The cloud of dust reached Washington, DC just as conservation advocate Hugh Hammond Bennett stood before the

120 Ibid, 52.
121 Ibid, 48.
122 Ibid, 57.
123 Miner, *Kansas*, 275.

Senate Public Lands Committee to argue for the creation of the Soil Conservation Service (SCS). After the Senators paused for a first-hand look, they voted to authorize the SCS.[124] The SCS encouraged farmers to plant trees to stabilize the soil. Among the SCS's legacies in Kansas were shelterbelts. Osage Orange windbreaks had long lined the Kansas landscape. In the late Nineteenth and early Twentieth centuries, Kansans had planted 95,596 miles of windbreaks. Over 40 percent of these, 39,400 miles, were Osage Orange hedge.[125] New Deal programs subsidized new wind breaks.

The conservation efforts came too late for many farmers. In 1933, lenders foreclosed on 62 of every 1000 farms in the Great Plains.[126] To address the emergency, Congress passed the Agricultural Act (1933), which established the Emergency Farm Mortgage, Farm Credit, Commodity Credit and Federal Surplus Relief Programs. The programs authorized $200 million to allow troubled farmers to refinance mortgages with reduced interest and assist farmers' coops in creating local farm credit associations. Despite the credit crisis, farmers continued to borrow money to purchase the equipment they needed to farm more acres. By 1940, 55 percent of the farmers in the Great Plains owned tractors, versus 23 percent nationwide.[127] Between 1920 and 1930 alone, the number of tractors in Kansas increased by 49,098; the number of trucks increased by 29,270; and the number of automobiles increased by 59,963.[128] Farmers, who had previously fueled their horsepower (horses) with their own crops, became increasingly dependent on cash for gasoline or diesel.

So farmers kept producing. During the 1930s, investors built ever-larger mills in the state's cities.[129] Three of the nation's five largest milling centers, Kansas City, Wichita, and Salina, were located in Kansas (the other two were Buffalo and Minneapolis). 10-15 percent of the nation's flour supply was being milled in Kansas;[130] and 75 percent of the flour produced in Kansas mills was used by bakers.[131]

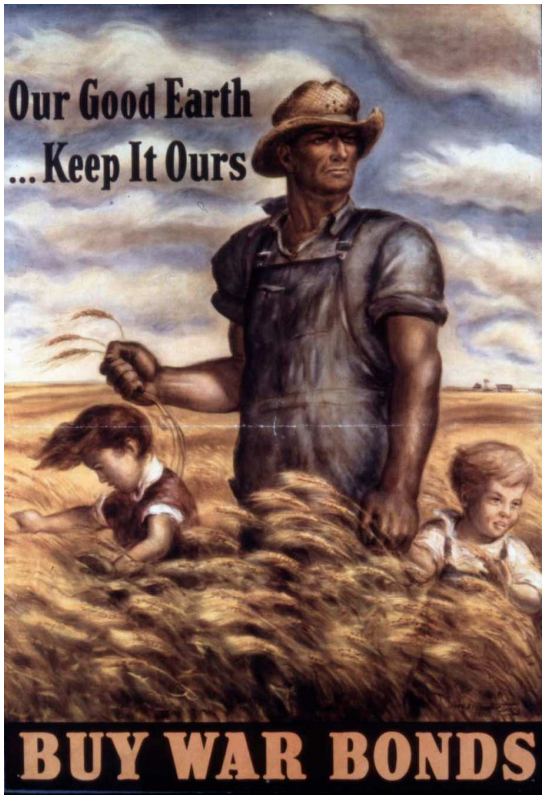

Figure 24: Agricultural iconography was used to sell war bonds. Courtesy Kansas State Historical Society, kansasmemory.org.

124 Douglas Helms, "Conserving the Plains: The Soil Conservation Service in the Great Plains," *Agricultural History* 64 (Spring 1990): 58-73.
125 John J. Winberry, "The Osage Orange, a Botanical Artifact," Pioneer America, 11 (1979): 134-141.
126 Grant, *Down and Out,* 17.
127 Grant, *Down and Out,* 15.
128 *Riley County*, 2.
129 US National Youth Administration, 34.
130 Ibid, 44.
131 Ibid, 84.

Some argued that the family farm could not survive in the industrialized economy. Between 1920 and 1930, the value of the average Kansas farm had sunk from $17,132 to $13,738. By 1935, it had plunged to $8469.[132] In Riley County, the average annual value for agricultural products from 1921 to 1930 was over $5 million. Between 1931 and 1934, the average had halved to $2.5 million.[133]

The Great Depression hit Kansas farmers particularly hard. By the time of the stock market crash, farmers had already endured a decade-long decline in crop prices. Many farmers tried to make ends meet by producing more crops, which flooded the markets with supply and further drove down prices. Others left their farms. Some were able to keep their land only with assistance from federal aid programs. Those who held on would see another period of prosperity during World War II.

Producing for Victory: World War II, 1941-1945

Farm production ramped up during World War II when the US was again supplying the world with grain. With over 16 million Americans serving in the military and many more working in war-related industries at home, the farming business lacked the necessary labor to meet the increased demand. As farmers focused on grain production, household goods, like milk, eggs and cheese were rationed. Americans supplemented rationed goods with fresh produce from their own "victory gardens." The war accelerated the changes in agricultural production that had begun in the early Twentieth Century, ensuring the total mechanization of farming and changing Kansas agriculture forever.

Figure 25: Urban residents were encouraged to plant "Victory Gardens" to ease the burden on labor-strapped farmers during the war. Courtesy Kansas State Historical Society, kansasmemory.org.

In 1942, US Secretary of Agriculture Claude Wickard announced that "The job of American farmers is to produce more than they have ever produced before."[134] But with labor and equipment in short supply, this was easier said than done. As in earlier times of labor shortages, farmers

132 Kreek, 5.
133 Riley County, 2.
134 Isern, 30.

borrowed to invest in labor-saving machinery. Unfortunately, the war effort affected industry like never before and steel equipment was hard to come by. In 1943, with the promise that new implements would be available by the next harvest, implement dealers bought up used combines after crops were harvested in the southern plains to ship north. One Kansas dealer shipped 12 flatcars of combines. But the new machines did not come in time for the 1944 harvest. The unprecedented implements shortages increased the demand for custom cutters, many of them implements dealers, who followed the wheat harvest south to north, towing combines and other equipment. With its expansive wheat fields, Kansas was a leader in the custom cutter industry. In 1942, 47.9 percent of the nation's custom cutters were based in Kansas.[135]

Figure 26: Women's Land Army Promotional Poster.

Despite the use of labor-saving equipment and new-found reliance on custom cutters, more than half of Kansas farmers reported labor shortages on their farms in 1943.[136] Because of the importance the government placed on farm production, farmers were given occupational exemptions from military service. These efforts were futile in keeping farmers "down on the farm" as high-paying urban war-industry jobs proved for many an irresistible draw. In 1942, Wichita's Cessna Aircraft, which paid nearly $1 per hour, reported that 80 percent of its workforce came from farms. To compete, farmers were forced to raise the salaries for their workers. During the war, the average farm hand's wage quadrupled from $20/month to $80/month including room and board. [137]

The federal government stepped in to ease labor shortages. One successful government program was the Women's Land Army (WLA), a subsidiary of the Emergency Farm Labor Program.[138] The WLA operated under the premise that even those who had no previous farming experience could be trained to lend a helping hand. Women from all walks of life responded to radio ads,

135 Isern 31-38.
136 Michael Grant, "Food Will Win the War and Write the Peace: The Federal Government and Kansas Farmers During World War II," *Kansas History* vol. 20, no. 4 (Winter 1997-98): 243-257.
137 Ibid.
138 Stephanie A. Carpenter, On the Farm Front: The Women's Land Army in World War II (De Kalb: Northern Illinois U. Press, 2003), 304.

enlisted in the WLA, and, after completing "Tractorette Courses," worked on farms. Thirty percent of those enlisted in the WLA hauled grain. Others drove trucks, tractors and combines. The WLA had a presence in the extension office of each Kansas county, with enlistees training at Kansas State Agricultural College. In 1944, the Kansas WLA roster included farm wives, daughters, farmers' relatives and friends, and "city girls."[139]

Farmers in some Kansas communities benefited from the labor of German prisoners of war. In 1943, the federal government imported 450,000 POWs from Hitler's Afrika Korps.[140] Camp Phillips near Salina, with a capacity of 3000, and Camp Concordia, with a capacity of 4000, were among the nation's largest POW compounds. Other Kansas compounds included those in Elkhart, Hays, Cawker City, Fort Riley, Lawrence, Eskridge, Council Grove, Ottawa, Peabody, Hutchinson, El Dorado, and Neodesha. Because many of the POWs had farming backgrounds, they provided an invaluable resource to strapped Kansas farmers. Farmers were required to pick up POWs in groups of four before 8:00 a.m., and return them to camp by 6:00 p.m. Despite instructions not to befriend these laborers, many farmers, particularly those who spoke German, bonded with POWs who worked alongside them.[141]

Despite labor and equipment shortages, farmers prospered during the war. The annual net income of Southern Plains wheat growers exploded by 2000 percent between 1939 and 1945. Between 1940 and 1945, the sale of cattle and hogs increased by nearly 70 percent. Still, many farmers were leery of what they perceived as bureaucratic meddling and were concerned about post-war sustainability. Smith County farmer A. A. Armstrong summed up the sentiment at an annual farmers' forum: "Do you know what an efficiency expert is? He is the one who can not make a living himself, but wants to be paid a salary for telling us rugged individualists how to make a living." Farmers who had witnessed the interwar slump in crop prices following World War I, anxiously feared a replay. In 1944, the National Democratic Farm Campaign aimed to capitalize on these fears: "as sure as Monday follows Sunday another farm depression will follow in the wake of the war."[142]

Consolidation and Corporations: the Post-War Years, 1945-1960

While war-worn Europe was recovering from the physical devastation of war, the United States continued to produce, contributing to a period of unprecedented economic prosperity. Wartime legislation, like the GI Bill of Rights, provided education, housing and business subsidies for returning veterans, permanently shifting the US economy away from its agricultural roots.

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139 Ibid, 127-128.
140 O'Brien, Patrick G., Thomas D. Isern and R. Daniel Lumley, "Stalag Sunflower: German Prisoners of War in Kansas," *Kansas History* Vol. 7, no. 3 (Autumn 1984): 183.
141 O'Brien, 183.
142 Grant, "Food Will Win the War," 249-257.

Fifty-one percent of World War II veterans took advantage of the educational opportunities provided by the GI Bill. Since the war, the percentage of college graduates in the US jumped from approximately five percent to thirty percent. As farms grew and more Americans left to pursue non-agricultural careers, the number of families living on farms decreased.

Despite the decrease in farm population, there was still a pent-up demand for farm-related construction, which, like other construction, had been on hold through the Great Depression and the War. Between 1940 and 1950, the number of farm-occupied homes decreased by 20 percent.[143] Of the remaining farmer-occupied homes, more than half were over 30 years old and in need of improvements. Attention to these improvements became increasingly pressing as farm families, like the rest of the American population, experienced a baby boom. Between 1948 and 1952, the Kansas extension service helped plan over 22,220 farm home remodeling projects and the construction of nearly 5000 new homes.[144]

Figure 27: Harvesting Wheat near Kingman. Courtesy Kansas State Historical Society, kansasmemory.org.

Ironically, the Kansas economy reaped the benefits of the Eisenhower-feared Military Industrial Complex, the nation's economic reliance on war-related industry. As incomes in the industrial, high-tech, and service industries rose, however, farm incomes remained stagnant. The demand for skilled labor at aircraft plants and other industries, coupled with growing educational opportunities, gave many returning war veterans an alternative to farming. This labor shortage helped alleviate the tendency for overproduction in the years immediately following the war - but, unfortunately did little to ensure a living wage for farmers. Those who chose to return to the farm found it difficult to keep up with the nation's rising standard of living. According to the US Census, the median income of farm families in 1949 was $1867, compared to the median income of all American families of $3073.[145] In 1955, the Rural Development Program, a descendent of the Rural Electrification Administration aimed at improving rural quality of life, found that over half of the nation's farmers earned less than $1000 per

143 Census of Housing: 1950 United States and Economic Sub-Regions – Volume III – Farm Housing Characteristics.
144 "Houses for Farm Families with Children," *Agriculture Experiment Station Bulletin* 365 (June 1954).
145 Income of Farm-Operator Families in 1949, Chapter 3, 1950 US Census

year.

As farmers continued to abandon small family farms, corporate farming, which had arrived by the early Twentieth Century and was outlawed in 1931, again gained a foothold. Corporate farmers argued that the only way for farming to survive was to increase acreage and production and decrease capital outlay. In 1940, the average farm was 174 acres. By 1974, farms averaged 385 acres. Between 1950 and 1975, farm output increased 59 percent. The corporate methods also succeeded in hog and cattle production after the war. Whereas past ranchers had shipped live cattle from ranches to meat packing plants in cities like Kansas City and Chicago, grain-fed cows resided on feed lots near rural meat packing plants by the 1960s. Between 1952 and 1974, the number of large-capacity feedlots grew from seven to 140.[146] Corporate farming continued to be controversial, particularly as corporate hog farms located near cities like Great Bend and as meat-packing companies relied on immigrant labor.

Since the Territorial Period, the story of Kansas agriculture has been a story of change and adaptation. As farming has become increasingly mechanized in the days since the Industrial Revolution, the vast majority of Kansans have turned their attention to other pursuits. Still, the agricultural character of the state has endured in both its people and places. Despite inevitable change, this legacy must not be forgotten.

II. Agriculture-Related Construction Materials and Techniques

Primitive Materials

The state's earliest agriculture-related structures were constructed with materials on hand. In eastern Kansas, this could mean unchinked log structures in river valleys where some wood was available. It could also mean hay-thatched pole structures. In the western regions, where trees were scarce from the beginning, the first buildings were often dugouts or soddies. Some early settlers used adobe or rammed-earth construction. Whereas sod construction used root-laden earth blocks straight from the ground, adobe used baked earth blocks. These primitive buildings were replaced with more permanent structures with the arrival of railroads, which brought milled lumber and other inexpensive materials to the communities they served. Where water was

Figure 28: George Wilcoxen's sod home, Ford County, Kansas. Courtesy Kansas State Historical Society, kansasmemory.org.

146 Wood, 285.

available, the first permanent structures were built of local brick. In areas with local stone, stone was the first permanent building material. Soddies and dugouts were still being constructed in Northwest Kansas in the early Twentieth Century. Although rare, some sod buildings are still extant.

Figure 29: Wood Barn, Brown County. Susan Ford.

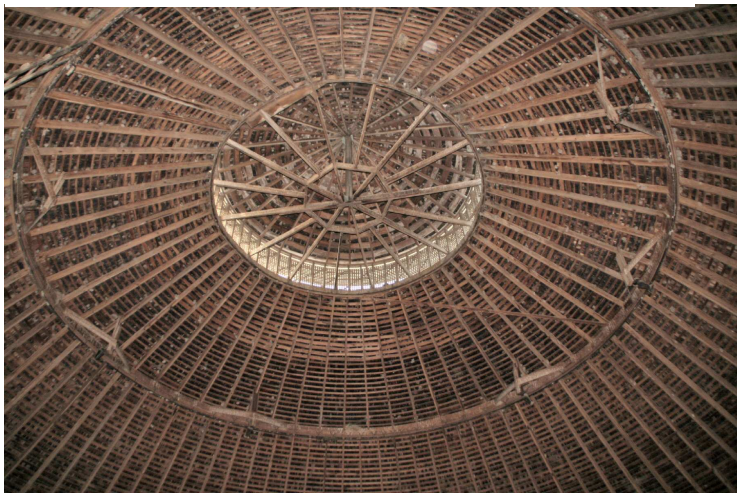

Figure 30: Intricate roof framing in a round barn in Marshall County. Brenda Spencer.

Wood

Seventy-one percent of the barns surveyed have wood as their principal material. The earliest wood buildings were log structures, constructed using local wood, hand-hewn into stackable logs with crude door and window openings. These early log buildings were generally meant to be temporary. Some settlers preferred sturdy tents to drafty log cabins. Many, like Wisconsin native E. D. Ladd, believed that "Timber [was] too scarce to build log houses of it."[147] The state's first frame buildings were prefabricated structures that came to Kansas in the 1850s on steamboats. Before the arrival of the railroad, frame structures required hauling milled lumber from the area's scarce lumber mills. Despite promises to early emigrant parties, the New England Emigrant Aid Company (NEEAC) was slow to bring these mills into operation. When it opened Lawrence's first mill in December 1854, the company relied upon logs floated on the river by Indian contractors who were paid a dollar's worth of lumber per log. Some of the pre-railroad buildings were constructed using timber frame/post and beam construction with hand-hewn mortise and tenon timbers sheathed with milled lumber.[148] This technique is also known as "braced frame" construction. Timbers were commonly made of cottonwood, harvested off the land.

When the railroad arrived in the late 1860s, pioneers began using balloon framing or platform framing techniques to quickly and efficiently construct lightweight barns and homes.

147 Malin, "Housing Experiments."
148 Ibid.

Balloon framing was made possible by the mass-production of nails, also available via the railroad.[149] Balloon-framed construction is the most common construction technique found on existing farm buildings. Balloon framing was cheap, fast, and lightweight. Unlike timber framing, balloon framing could be achieved by someone working alone as it required only that the person be able to lift one piece of milled lumber at a time. Balloon-framed buildings could be easily moved. In the late Nineteenth Century, innovative builders like Osborne County's Louis Beisner, began experimenting with framing techniques that allowed larger open spans for hay storage. Beisner promoted what he called his "sag-proof" roof. By the early Twentieth Century, there were many different gambrel-roof truss types. Balloon frames were commonly constructed of yellow pine, which was recommended by the U. S. Department of Agriculture for barn framing.[150]

For exterior cladding, the Department of Agriculture recommended cypress, touted as "The Wood Eternal." A few barns had clapboard siding, which produced a finished look, but whose 1' X sheathing reduced breathability. In contrast, drop siding, shiplap siding and vertical cladding, which required no sheathing, enhanced ventilation. Drop siding, either shiplapped or tongue-and-grooved, generally came in 5 ½" widths. "Double V Siding" in the 1919 Sears Catalog, created the appearance of two 2 ½" rows.[151] The earliest frame structures often employed vertical cladding in the form of butted boards, spaced boards, or board and batten. Many of these were built in the state's southeast region. Sometimes, farmers and barn builders used battens to fill the voids between spaced vertical boards. In some later examples, metal channels were used in lieu of wood battens. Two barns, one in Ellsworth County (EL-075) and another in Ford County (FO-148), have these unique battens. Wood continued to be used in farm construction through the Twentieth Century. In the early 1960s, manufacturers began to produce lumber-rigid frames, which farmers could purchase from local lumber yards.[152]

Figure 31: Intricate stonework in doorway of barn. Brenda Spencer.

Disadvantages of wood construction included wood's proneness to insect infestation, its flammability, and its relative impermanency compared to masonry construction. Barn builders were cognizant of these risks and addressed them through technological advances including composition roofs and concrete.

149 Peterson.
150 Rebecca Hunter and Dale Patrick Wolicki, *Sears, Roebuck Book of Barns: A Reprint of the 1919 Catalog*, (Perfect Paperback: 2005), 4.
151 Ibid.
152 Noble, *Barns of the Midwest,* 228.

Stone

In the stone-rich regions of northern Kansas and the Flint Hills, settlers built barns and farmhouses of limestone or sandstone. Today, 16 percent of the barns surveyed have stone as their principal material. The most common stone was limestone, which varies in color from white to tan to yellow. Field stones, surface stones cleared from fields before cultivation, were used for dry-laid fences and rustic buildings. Some used rubble limestone as field stone and tooled limestone for details like quoining, lintels, and sills. Other buildings used tooled limestone, quarried locally by drilling holes in stone beds, pouring water in the holes, and using the freeze/thaw process to break the stones into uniform-sized pieces. Because these stones were commonly also used for fence posts, these freeze-thaw quarried stones, evident by their grooved drill marks, are called "post rock." The stone on some southeast Kansas barns has dimple marks. This may indicate a similar quarrying or setting technique.

Although many settlers obtained their building stone from their farms, others purchased stones from one of the state's commercial quarries. The state's best-known commercial quarries were located in the Flint Hills, where capitalist Barney Lantry and others made their fortunes in the stone business beginning in the 1870s. Flint Hills limestone was shipped by the ATSF Railroad for the construction of a number of the state's prominent buildings, including the Kansas Statehouse.

Figure 32: Sandstone barn in Ellsworth County. Brenda Spencer.

In Ellsworth County and limited regions in central Kansas, builders used local sandstone, geologically newer and, therefore softer than limestone. Kansas sandstone is brown or red in color. In most instances, it was used in "rubble" form. In rare instances, as in Ellsworth County's Hodgden House and Fort Harker, the sandstone was quarried in large blocks and tooled. Farmers and builders personalized stone barns with various architectural details. Although some lintels were made of hewn timbers, bricks, or simple stone, many featured arches, keystones, date stones and other carved details.

Advantages of stone were that it could be collected from the building site and, therefore, required little in materials costs and that it was fireproof. Among the disadvantages were that it required a good deal of labor and was difficult to transport. Native stone was commonly used from the time of early settlement until World War I. It regained popularity during the 1930s, when government programs like the WPA provided for labor-intensive construction projects.

Brick

Brick was uncommon on Kansas farms because brick manufacturing required water, a scarce commodity in most of the state. Brick agriculture-related buildings can be found in river valleys, particularly in the northeast and southeast regions. Many larger cities had their own brick factories, which harvested clay, mixed it with sand and water, shaped it, dried it and fired it. Early locally manufactured brick was low-fired and, therefore, prone to deterioration. Until the early

Figure 33: Brick over limestone foundation, Montgomery County. Brenda Spencer.

Twentieth Century, brick was used in load-bearing walls. Later, it was applied as a facing on reinforced concrete structures. Advantages of brick construction included its fire-resistance qualities, its permanency, and its relative light per-unit weight compared with stone. However, unlike rubble limestone construction, brick construction required the skilled labor of trained brick masons – among the construction professionals who were not generally employed by farmers until the early Twentieth Century. The Kansas communities best known for brick manufacturing in the late Nineteenth and early Twentieth Centuries were Buffalo, home of Buffalo Brick Company, and Coffeyville, home of the Standard, Vitrified, and Yoke Brick Companies. A few barns near these communities feature brick foundations.

Figure 34: Hollow Clay Tile Barn, Geary County. Brenda Spencer.

Hollow/Structural Clay Tile

Hollow Clay Tiles were first commercially manufactured in the late Nineteenth Century, when following the Chicago Fire of 1871 they were touted for their fireproof qualities. Although clay tile was similar to brick in color and consistency, it was formed into hollow blocks to lighten its weight – and, therefore cheaper and easier to build with than brick. Hollow clay tile was used in both structural and non-structural applications. On farms, it was commonly used for silos, elevators and barn foundations. Brand names included the W. S. Dickey Clay Tile Company, based in Kansas City. With the common use of reinforced

concrete, particularly after World War II, hollow clay tile fell out of favor.

Concrete

Early Twentieth-Century advances in concrete construction revolutionized agriculture-related buildings. Concrete was durable, fireproof, lightweight, easy to clean and cheap. Harmon S. Palmer patented his cast-iron concrete block machine in 1900. These hand-operated machines were used to manufacture concrete masonry units on the building site. Some farmers purchased their own machines for use in constructing buildings on their farms. The earliest of these blocks, often used for porches and foundations, had rusticated faces to create the appearance of stone. By 1930, the manufacture was standardized, with most blocks being 8" X 8" X 16" in size.[153]

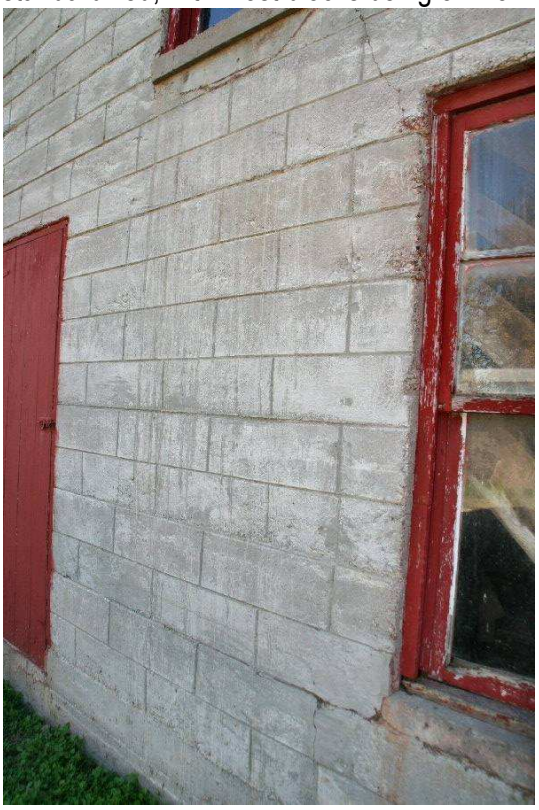

Figure 35: Formed Concrete barn scored to look like stone. Chautauqua County. Brenda Spencer.

Reinforced concrete evolved as a way to make cast-iron skeletal construction more fire-resistant. By the 1910s, reinforced concrete was commonly used in agriculture-related buildings, for stall floors, formed mangers, cellars, fence posts, septic tanks, silos, grain elevators, water troughs and foundations. Agriculture-related buildings were some of the first to use this construction technique. Buffalo, New York's concrete grain elevators are said to have inspired European International Style architects. By the 1930s, nearly every Kansas community had its own reinforced concrete grain elevator – and nearly every farm had a reinforced concrete silo.

Portland Cement was first produced in the Lehigh Valley of Pennsylvania in the 1870s. In the early Twentieth Century, the Lehigh Portland Cement Company advertised its product to farmers stating that "It insures sanitary conditions wherever used, and has the recommendation of health authorities everywhere."[154] Kansas took the lead in the use of concrete in agriculture-related buildings. In 1916, KSAC professor Roy A. Seaton published a book entitled *Concrete Construction for Rural Communities.* Seaton listed the following eight reasons for using concrete on the farm:

1. They are often much cheaper in first cost than brick or stone.
2. They can be manufactured near the building site, thus saving transportation charges.

153 Jester, Thomas C., ed. *Twentieth Century Building Materials: History of Conservation.* New York: McGraw-Hill, 1995.
154 "The Lehigh Farm Book of Structographs" Lehigh Portland Cement Co, 1927.

3. They can be more cheaply laid into the wall than brick, because of the larger size of the blocks.
4. On account of fewer joints than in brick work, a considerable saving in mortar results.
5. The air spaces in the walls make the building cool in summer and warm in winter.
6. The air spaces help to prevent water from soaking through the wall so that with well-made blocks the plastering may be done directly to the inner face of the wall, without furring.
7. The air spaces permit pipes and wires to be concealed in the walls.
8. The construction is substantial and fire-proof.[155]

Five percent of the barns surveyed have concrete as their principal material. These include concrete block, some of which was formed into rusticated blocks, formed concrete, and formed concrete that was scored to create the appearance of stone courses.

Figure 36: "Strongbarn" was one brand name of corrugated metal used on barns and other agriculture-related structures. Brenda Spencer.

Metal

In the late Nineteenth Century, metal was used only in limited applications. For instance, iron hoops were used to hold metal staves to create early silos. However, metal was commonplace on farms by the early Twentieth Century. Before the prominence of reinforced concrete, metal was used on wood-framed agriculture-related buildings to improve fire resistance and strength. Corrugated metal was invented in the 1840s, when corrugated sheets were manufactured from galvanized iron. Beginning in the 1890s, manufacturers began using steel instead of iron. The material was cheap, long-lasting, low-maintenance, fire-resistant and easy to install. Farmers commonly applied corrugated metal to their barns and other buildings in the early Twentieth Century. Grain elevator operators applied corrugated metal to grain elevators beginning in the first two decades of the early Twentieth Century. Manufacturers used indestructible corrugated metal for the construction of Quonset Huts in the post-war years. Other

155 Roy A. Seaton, *Concrete Construction for Rural Communities*, (New York: McGraw-Hill, 1916).

manufacturers, like the Butler Manufacturing Company, founded in Clay Center, Kansas in 1901, had begun to manufacture galvanized metal buildings in the early Twentieth Century. Their buildings gained popularity in the postwar years.

Some barns were covered with pressed metal siding. Pressed metal sheets resembled rusticated stone or brick. Sheet metal siding was manufactured beginning in the late Nineteenth Century. Area companies included the W. F. Norman Company in Nevada, Missouri, which began manufacturing pressed metal products in 1898. Steel was also used for windmills by the turn of the century.

F. ASSOCIATED PROPERTY TYPES

Introduction

There are three major property types for resources included in the MPS "Historic Agriculture-Related Structures of Kansas." These include Primary Farm Structures, Secondary Farm Structures and Features, and Other Agriculture-Related buildings. This document provides descriptions and historic contexts for eight principal barn types, corn cribs, granaries, and farmhouses; twelve categories of secondary farm structures and features; and other agriculture-related buildings, including grain elevators and mills. The typology was based upon a statewide survey of over 350 farms and guidance from barn studies, including Albert Noble's classic volumes *The Old Barn Book: A Field Guide to North American Barns and Other Farm Structures* and *Barns of the Midwest.*

The Property Types for barns, which make up the majority of Primary Farm Structures, are based primarily on buildings' exterior physical characteristics, including construction type and roof form, rather than construction date, historic use, or ethnic association. This MPS offers this approach for the following reasons. First, because of their vernacular nature, barns can be difficult to accurately date based upon construction technique or materials. Although new construction technologies, such as balloon framing, were available to builders by the late Nineteenth Century, many farmers built their own barns using local materials and time-honored techniques. For instance, farmers constructed timber-framed barns well into the Twentieth Century. Therefore, it can be difficult to date a barn based upon construction technique alone.

Figure 37: Haskell County Farm, ca. 1915. Courtesy Kansas State Historical Society, kansasmemory.org.

Secondly, with few exceptions, Kansas barns were built for the dual purpose of housing farm animals and hay. Only a few barns were constructed for dairy production or solely for stock. To accommodate various uses with the same design, catalog companies and Agriculture Experiment Station Bulletins, the arbiters of barn trends, offered standard exteriors with interchangeable floor plans. Although these unique uses may be clear from a thorough examination of the building's interior, they are not ordinarily clear from the building's exterior. Therefore, classifying barns on use alone is imprudent.

Third, with few exceptions, Kansas barns do not interpret the ethnicity of the farmers who built them. By the late Nineteenth and early Twentieth Centuries, when most Kansas barns were built, barn designs were greatly influenced by national trends, promulgated through farming publications, lumber yards, and catalog companies. For instance, although bank barns were introduced by farmers of German heritage, they quickly earned a reputation for efficiency among farmers of all ethnic backgrounds. Therefore, it is clearer to identify bank barns or other "ethnic" barns as type based upon visual characteristics than to categorize them by ethnic tradition alone.

The Primary Farm Structures Category also includes farmhouses, corn cribs, and granaries. Like barns, farmhouses can be classified by their exterior appearance. In contrast, because corn cribs and granaries were designed with a singular use in mind, they are identified by their use. The original use of these structures is clearly reflected in their exterior appearance. Secondary Farm Structures and Features are also defined by their original function. They are buildings, including outhouses, springhouses and cellars, built to fulfill a specific and, typically, singular purpose. As discussed below in "Integrity of Setting," the rural farm setting is an essential element of most farms. Although the inclusion of farm land is not required with individual or farmstead/group listings, the inclusion of adjacent, related farm land is encouraged.

I. Primary Farm Structures

Barns are farm buildings constructed for the purpose of sheltering farm animals, generally horses and cattle, and storing animal feed, including grain and hay. Because seed, feed, livestock and, later, farm equipment, represented the majority of their business capital, farmers focused great attention on, and significant resources in, their barns. As a result, barns are generally the largest, and often oldest, buildings on historic farmsteads. A barn may be listed either individually or as part of a farmstead.

Figure 38: Barn in Haskell County. Courtesy Kansas State Historical Society, kansasmemory.org.

Granaries and Corn Cribs are included in this category because of the central role they played in farm production, particularly in the period before cooperative grain elevators and farm mechanization. Granaries were built for the sole purpose of storing grain, usually wheat. Historically, they were essential to the state's wheat farms. Despite their association with the state's rich wheat tradition,

granaries become obsolete after the advent of grain elevators and farmers' cooperatives. Still, after farmhouses and barns, Granaries are the most likely farm structures to remain on historic farmsteads. This is due in part to their size and related adaptability for new uses. Granaries may be listed either individually or as part of a farmstead.

Before Kansas came to be known as the wheat state, it was known for corn production (hence the infamous line, "I'm as corny as Kansas in August."). In an era before agricultural cooperatives, when corn was stored on the cob and on the farm, Corn Cribs were essential. Unfortunately, whereas many Granaries are still extant, Corn Cribs have become extremely rare for a number of reasons. Foremost among these is that corn cribs were built with wide open slats, which provided maximum ventilation for corn but made them difficult to adapt for new uses. Like barns, Corn Cribs may be listed either individually or as part of a farmstead.

Farmhouses are also included in the category of Primary Farm Structures because they provide a context for other farm buildings. Without shelter for the family, there would be no family farm. Still, because they are not directly related to agricultural production, they may only be listed under this MPS within the context of farmsteads, not individually under this MPS. However, farmhouses may be individually listed on their own outside of this MPS provided they meet the criteria for eligibility for individual listing set forth by the National Park Service.

A. Bank Barns

Figure 39: Chautauqua County Bank Barn. Brenda Spencer.

Description
Bank barns are characterized by exterior entrances on two levels. Builders generally achieved bi-level access in one of two ways. Most are built into the side of a hill or bank, which creates a natural ramp that provides access to the barn's second level, usually along the broad side. Builders could also achieve access on land without a natural bank or hill by constructing an earthen or masonry bridge or ramp on one side. On the back side, an exposed lower or basement level is generally reserved for animal shelter.

The second level, which is accessible through a broad-side opening on the hill or bridge/ramp side, typically provides space for hay storage.

Historically, the broad-side opening allowed farmers to drive wagons filled with loose hay into the upper part of the barn, where they then used hay forks to raise the hay into haymows, which often flanked the wagon bay. Because this unique design allowed farmers to fill the haymow from inside the barn, bank barns did not require hay doors or hay hoods. Once stored in the haymow, hay could easily be transferred through openings or chutes from the upper levels to the livestock area below.

Figure 40: Bank Barn in Ellsworth County. Brenda Spencer.

Kansas bank barns are generally two and a half stories high – with some exceptional examples being three and a half stories high. Most bank barns have stone exteriors with wood-framed interiors. However, some are wood framed with horizontal or vertical cladding and stone or concrete foundations. The earliest examples are timber-framed with mortise-and-tenon joints. By the late Nineteenth Century, farmers combined timber-frame construction with balloon framing techniques, sometimes creating hybrids where timbers, which served as structural supports, and other framing members were nailed or braced together. With the exception of a few barns with hipped or gambrelled roofs, most Kansas bank barns have gabled roofs.

Significance

Bank barns are common throughout Kansas, but early examples are found particularly in counties settled by persons of Pennsylvania-German (also called “Pennsylvania Dutch”) heritage. Because many date to the early decades of the state’s history and generally rely upon banks or hills, they predominate in the early-settled counties of Eastern Kansas. Bank barns are sometimes called “Pennsylvania Barns” or “Pennsylvania Dutch Barns.”

German immigrants were among the first to farm in Kansas, many of them involved in the early free-state movement. The Kansas Pacific railroad marketed railroad trust lands to Pennsylvania-Germans, who migrated in large numbers beginning in the 1870s. While some came to Kansas directly from Pennsylvania, others came from Pennsylvania German settlements in Ohio. A contingent of German Baptist Brethren and Brethren in Christ, also known as Dunkards, settled in Doniphan, Brown, and Dickinson Counties.[156] Germans maintained a tradition of housing their cattle in barns in winter, building their barns to serve the dual purpose of hay storage and housing for livestock. Despite their popularity, these buildings tend to be in fair to

156 Shortridge, 127.

poor condition and many are under threat of demolition. Doniphan County has recognized the significance of these buildings by listing sixteen of these barns under the "Byre and Bluff Barns of Doniphan County" Thematic nomination. The term "byre" refers to a barn's use to house cattle.[157]

By the end of the Nineteenth Century, families of German heritage had settled throughout the state, constructing bank barns throughout Eastern Kansas and in most of the state's counties. They are most commonly found in the state's hillier Northeast Region, where 35 percent of the barns surveyed were bank barns. The bank design gained favor with farmers of all ethnic backgrounds, remaining popular into the Twentieth Century. In their 1919 catalog of pre-cut barns, Sears offered their gable, gambrel, and arch-roof barns with masonry first floors that allowed farmers to create a bank ramp to access a second-floor entry on the barn's broad side.

Figure 41: Gable-Roof Barn in Anderson County. Susan Ford.

B. Gable-Roof Barns

Description

Along with Gambrel-Roof Barns, Gable-Roof Barns make up the majority of Kansas barns. Most gable-roof barns are one-and-a-half or two-and-a-half stories high, with animal shelters, stalls and/or stanchions, along with granaries on the first floor and hay storage on the upper floors. The majority have vertical cladding, including butted planks and board and batten. The builders often delineated the prominent gables of these barns by accentuating or overlapping the vertical boards that terminate at the start of the gable – to create the appearance of a pent roof. Some of these board ends are finished with a sawtooth or dogeared pattern.

Gable-Roof barns date from all periods of farm development. The earliest Gable-Roof barns are timber-framed with mortise and tenon joints. By the late Nineteenth Century, farmers combined timber-frame construction with balloon-framing techniques. Timber framing was employed as late as 1923, when farmers could order a pre-cut timber-framed barn from the Sears catalog.

157 Noble, *Barns of the Midwest*, Chapter 4; "Byre and Bluff Barns of Doniphan County," Thematic Nomination, National Register of Historic Places.

First-floor plan configurations of gable-roof barns differ depending on the barn's historic use and size. Most feature prominent openings on the gable end, with a corresponding center-aisle plan with stanchions, stalls and/or granaries on each side. Some barns feature a T-plan, with intersecting central corridors or perimeter corridors. Some large barns, like the Cooper Barn in Colby, feature two double-loaded corridors, with four rows of stalls.

The upper floors of gable-roof barns are generally devoted solely to hay storage. Gable-end hay doors allow hay to be hoisted from wagons outside the barn directly into the haymow using a hayfork on tracks. Hay hoods, which project from the gable end, provide not only protection for the hay, but also an extended structure for the center track on which the hay fork operated. A few of these barns were built solely for hay storage, with hay stored on the ground of the first floor and stacked to the second-floor roof. Haymows, which are accessible from the exteriors by hay doors or from the interior via ladders or narrow stairs, generally cover the entire second, and sometimes third, floor.

Figure 42: Gable-Roof Barn in Marion County. Brenda Spencer.

Figure 43: Gable-Roof Barn with Broad-side opening. Labette County. Brenda Spencer.

The Gable-Roof category includes barns elsewhere classified as three-bay, English, or threshing barns. Unlike other gable-roof barns, these barns feature a broad-side opening in lieu of a gable-end opening. The broad-side opening corresponds with a central corridor that provides interior access to multiple stories of space. Because these barns allow farmers to drive a wagon in and put up hay from the corridor, they do not have hay hoods on their exteriors. Like other gable-roof barns, these barns have stalls, stanchions, and/or granaries flanking their corridors. True threshing barns, which pre-date mechanized threshing implements, are relatively rare in Kansas. Although the threshing floor was no longer necessary by the late Nineteenth Century, the three-bay side-gabled form remained popular through the early Twentieth Century.

Many of the gable-roof barns have lean-to additions or symmetrical shed bays that create saltbox or broken-gable rooflines. Although these additions do not ordinarily change the building's Property Type, barns with sweeping rooflines or symmetrical side bays fall into the Midwest Prairie Property Type.

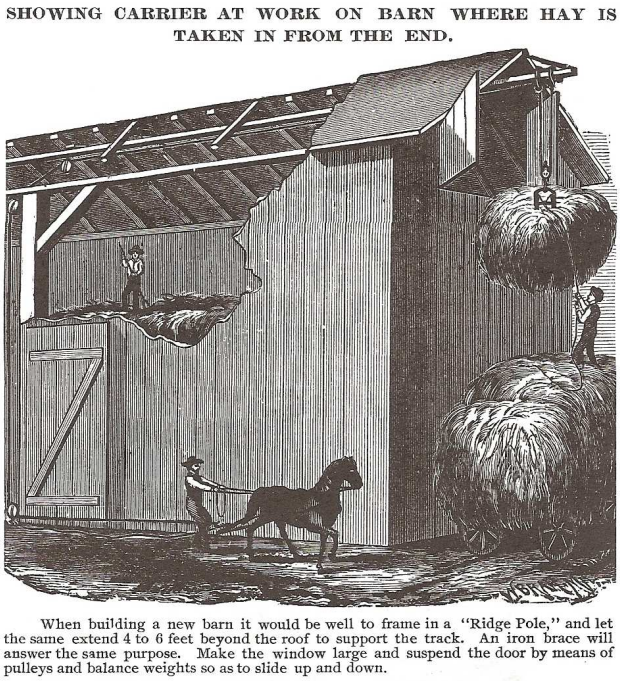

Figure 44: Hoisting loose hay into the haymow from the outside haydoor using a hayfork and track.

Significance

Like Bank Barns, Gable-Roof Barns were often constructed to accommodate a variety of uses – from hay storage to animal shelter to granary and corn crib. Before mechanized threshers were available in the 1870s and 1880s, these barns also provided a space for the threshing of wheat, which became a prominent cash crop in Kansas in the 1870s. "English Barns" or "Three-Bay Threshing Barns," which are included in the Gable-Roof Barn property type, were designed to accommodate the "flailing" operation. These barns are identified by a tripartite interior form and occurrence of double doors on the long sides. The wide doors allowed a wagon to enter. The harvested wheat was placed on a threshing floor, where the grain was separated from the chaff. The Three-Part barn, which originated in Western Europe, was the prevailing barn type in the Old Northwest, from whence a majority of early Kansans emigrated. Threshing barns pre-date mechanized threshers and are, therefore, generally timber-framed.[158]

Although the first threshing machines were available in the 1860s, they were not common until the 1880s. By then, few farmers were hand-flailing wheat. Those who could not afford their own threshing equipment joined together with neighboring farmers to purchase it – or hired crews to thresh their wheat. Combines, which became common in the early Twentieth Century, combined the act of harvesting and threshing.

As farming became increasingly mechanized, farm buildings changed. Without the need for a threshing floor, the second floors of barns could be wholly devoted to hay storage, accessible via an exterior hay door and hoisted using new implements such as hay forks. As farmers placed an increasing premium on hay storage, other barn types began to predominate. In the 1920s, gambrel-roof and arch-roof barns usurped the gable-roof barn as the barn of choice. Catalog

158 Noble, *Barns of the Midwest*, Chapter 3.

companies continued to offer Gable-Roof barns, generally by promoting them as economical alternatives to gambrel-roof models. In 1917, Montgomery Ward advertised a gable-roof barn as "A Good Practical Barn." The Gordon-Van Tine Company marketed a Gable-Roof barn as "An Extra Strong Barn for the Conservative Buyer."

Gable-Roof Barns are relatively equally distributed among the state's regions. However, there are fewer in the state's Northwest Region, where only eight percent of the barn's surveyed were Gable-Roof Barns. They are most common in South-Central Kansas.

Figure 45: An iconic Gambrel-Roof Barn in Chase County. Brenda Spencer.

C. Gambrel-Roof Barns

Description

Barns classified under this Property Type are distinguished simply by their gambrel roofs. Gambrel-Roof barns are generally one-and-a-half or two-and-a-half stories high, with concrete or masonry foundations and wood-framed upper stories. Like most Gable-Roof barns, Gambrel-Roof barns usually feature a central aisle flanked by stalls, stanchions and/or granaries on the first floor and hay storage on the upper stories.

Because Gambrel-Roof barns were designed for maximum hay storage, haymows typically cover the entire upper level. As in many gable-roof designs, hay was historically carried into the haymow through a large hay door under a hay hood, designed not only to shelter the hay, but also to provide for an extending hay-fork tract. Although Gambrel-Roof Barns were built in Kansas from the 1880s until ca. 1950, the methods of construction varied widely over time. Early gambrel roofs, constructed with timber and heavy composite framing, created a visually interesting roofline. Later gambrel roofs, with balloon framing and advanced truss systems, provided a roof structure that maximized the volume of the roof space. High-style examples feature flared eaves with exposed rafter tails. The later examples employed "new" building materials and trends. For instance, the vast majority of concrete or part-concrete barns have gambrel roofs.

Gambrel-Roof Barns were available from catalog companies, including Sears Roebuck and Company, Montgomery Ward and Company, and Gordon-Van Tine. Sears barns were clad in cypress vertical cladding, "Drop Siding" or "Double V Siding." Drop siding, generally used on self-supporting braced rafter models with maximum haymow volume, is similar to clapboard. Double V siding, generally used on trussed-roof models, resembles boxcar siding.[159]

Figure 46: Gambrel-Roof Barn near Bird City. Brenda Spencer.

Most Gambrel-Roof Barns originally had a rectangular footprint, although some were built with lower cross gambrels. Many Gambrel-Roof Barns have shed and hip additions on secondary elevations. Generally, these additions do not affect the property-type designation. However, if side bays feature a low-sweeping roof or symmetrical side shed bays with a broken roofline, the barn may be classified as a Midwest Prairie Property Type. Dairy barns are often distinguished by gambrel roofs and adjacent or attached silos and/or milkhouses.

Significance

The Gambrel-Roof Barn has earned a place in rural iconography as the prototypical American barn. Gambrel-Roof barns first appeared on the Kansas landscape before 1887, when a number of them appeared in Everts Atlas. In his thesis entitled "Barns and Cultural Change in Central Kansas," Greg Schultz argues that Gambrel-Roof barns were introduced by Swedish farmers, who settled near Lindsborg.[160] These earliest Gambrel-Roof barns featured very subtle changes in roof planes to create a transition from a gable roof form. Through the years, builders used multiple truss types, including Open Center/Wing Joist (1880s-1910s), Shawver Truss (1880s-1930s), Iowa/Clyde Truss (1923-1940s), and Braced Rafter/Wing Joist (1900s-1940s) as structural developments allowed farmers to achieve an increasingly more open haymow.[161]

Early examples were designed and executed by master barn builders. Among those who experimented with gambrelled roofs

159 Hunter, 4-5.
160 Greg Schultz, *Barns and Cultural Change in Central Kansas*. Masters Thesis. University of Kansas, 1983.
161 Noble, *Barns of the Midwest.*

was Louis Beisner, a carpenter/architect in Natoma, Kansas who built what he called "no-sag" roofs. Beisner was born in Iowa in 1871 and moved in 1891 to Natoma, where he and his brother operated a furniture business. By the turn of the century, Beisner specialized in designing and building Gambrel-Roof barns.[162] Structural advances, like those achieved by Louis Beisner, allowed for open haylofts, more or less uninterrupted by structural members. These designs were desirable among farmers looking to maximize hay storage.

The afore-mentioned structural advances corresponded with an increased demand for hay storage tied to the growing size of the average farm, increasingly mechanized hay production, and a declining supply of lumber. In the first two decades of the Twentieth Century, the average Kansas farm was nearly double the size of the national average, rising from 241 acres in 1900 to 275 in 1920. Larger farms required more storage space. Advanced grapple forks and hay tracks allowed farmers to devote the upper stories of barns, accessed via a prominent hay door, to hay storage. Still, with the nation's lumber resources being depleted, it was necessary to create maximum volume with minimum materials. The solution was the plank-frame barn – usually in the form of a Gambrel-Roof or Arch-Roof design.

By the 1910s and 1920s, gambrelled roofs had become the industry standard. Farmers could buy the popular type in pre-cut kits or build their own using standardized plans purchased from lumber companies. Even Louis Beisner's designs were apparently adopted by catalog companies. According to historical accounts, the "Mack-Welling Lumber Yard made a blueprint of his design and it was distributed to all the Long-Bell lumber yards and eventually to most of the lumber yards in the United States." Although lumber companies had a bustling barn business, the best-known purveyors of barns and houses by mail were Sears, Roebuck and Company, Montgomery Ward, Loudin and Aladdin. The North American Construction Company, renamed Aladdin in 1916, began selling pre-cut barn kits in 1916, and continued through the 1920s. Like Aladdin, Montgomery Ward and Sears began their mail-order building businesses by selling homes. From 1916 to 1919, Montgomery Ward sold barns in their homes catalogs. Sears began selling mail-order homes in 1908 and barns in 1910. Their 1918 *Book of Barns* offered 56 pages of farm-related outbuildings from granaries to chicken coops to barns.[163] Another company was Louden, which sold its kits using the slogan, "To modernize your farm, Loudenize your barn." Many farmers relied upon standard plans and materials from their local lumberyards.

Although culturally associated with dairy farms, gambrelled roofs were used in Kansas mostly for livestock shelter and hay storage. They are most commonly found in regions that received their first waves of permanent settlement in the early Twentieth Century. For instance, they are most common in the state's Southwest region, where 52 percent of the barn's surveyed were Gambrel-Roof Barns.

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162 "Louis C. Beisner," *Osborne County, Kansas, 1870-1930* (Osborne County Genealogical and Historical Society, 1981); "Church Doors Close After 106 Years," *Topeka Capital-Journal,* 23 January 2005.
163 Joy Sears, *Barns by Mail: Pre-Cut Barns by Mail-Order Catalog in the Midwest from 1900 to 1930*. Masters Thesis. University of Oregon, 2001, 20-30.

D. Arch-Roof Barns

Description

Barns classified as Arch-Roof Barns, which include both rounded-arch and Gothic-Arch roof barns, are distinguished simply by their arched roofs. In models with vertical cladding, the joints of vertical members are found at the junction of the lower and upper levels. Like Gambrel-Roof Barns, Arch-Roof Barns were designed for maximum hay storage. As in Gambrel-Roof Barns, hay hoods and hay doors are major character-defining features of Arch-Roof Barns.

Significance

The development of the wood-frame barn climaxed with the Gambrel-Roof Barn and culminated with the Arch-Roof Barn. Arch-Roof Barns gained popularity in the late 1910s, when manufacturers began to mass-produce prefabricated curved rafters. Like many Gambrel-Roof Barns, Arch-Roof Barns were promulgated by pre-cut catalog companies. The Sears, Roebuck Company featured an Arch-Roof Barn on the front and back covers of its 1919 catalog. Arch-Roof Barns were also marketed by the Gordon-Van Tine Company, which first featured the barns in its 1917 catalog.[164] The Louden Company also made significant advances in arch-roof construction. In the late 1930s, agricultural engineers developed a system of laminated rafters, which enhanced the structural integrity.

Figure 47: Arch-Roof Barn in Cloud County. Brenda Spencer.

By the time Arch-Roof Barns peaked in popularity, farmers had begun to place less of a premium on hay storage. As they transitioned from animal-powered machinery to tractors, draft animals, and the hay to feed them, were no longer necessary. At the same time, in the 1930s, the first portable hay balers, which could gather, bale and tie hay in one motion, were available. Balers could condense loose hay from five pounds per cubic foot into bales that held 40 pounds per cubic foot. These dense small bales could be stored with ease and in less space. In the 1960s, the technological contributions of two Kansans, agricultural engineer Wesley F. Buchele and Hesston Corporation's Lyle Yost, led to the development of large round bales, which could be covered and stored on the ground.[165] So, even farmers, particularly dairy farmers, who still relied upon hay, no longer required vast storage space. In the post-war years, one-story steel machine sheds and storage buildings forever supplanted wood-frame

164 Noble, *Barns of the Midwest*, 161-162.
165 Robert L. Marsh, *Barns of Kansas: A Pictorial History* (Robert Marsh, 2003), 13.

barns.

Arch-Roof Barns are very rare in Kansas. They are equally distributed among the state's regions, making up about three percent of the barns surveyed statewide. There are at least two known Sears catalog barns with Gothic-Arch roofs – one near Fowler in southwest Kansas and one near Lincolnville in Marion County. The two are nearly identical in design.

E. Polygonal/Round Barns

Description
Polygonal and Round Barns are identified by their overall shape, generally round or octagonal topped by domed, conical, or polygonal roofs. Whereas Gable-Roof, Gambrel-Roof and Arch-Roof Barns were constructed to provide both animal shelter and hay storage, Polygonal and Round Barns were constructed principally for animal shelter and, in many cases, silage.

Polygonal and Round Barns usually have one story clad with vertical cladding or siding; round barns sometimes have curved horizontal siding. The remainder of the barn volume, one or two stories, is made up of conical or domed roofs, pierced by cupolas or ventilators, which provided the ventilation achieved in other barn types by more breathable exterior materials. On the exterior, the barns usually feature repetitive square windows, multiple pedestrian entries, and one wide driveway entrance. The main door opens onto a central round space for a silo, generally surrounded by a feed alley and mangers, then stalls. An outer litter track provides access to the stalls from the barn's perimeter. There were two primary styles of these barns. Because these barns were designed with entrance drives, some had no upper-story openings. Hay or feed was brought into these barns through the entrance. Others, however featured traditional hay forks with hay tracks that pierced dormers.

Figure 48: Sears Catalog Round Barn in Marshall County. Brenda Spencer.

Character-defining features of round barns include cupolas or ventilators, four-pane square windows, double entrance doors, and exposed rafter tails. Round barns have become increasingly rare. In 1999, James Shortridge identified 24 extant round barns in Kansas.[166] Only nine round barns were located as part of the 2007 barn survey.

Significance

The octagon building form first gained momentum in the 1850s, after Orson S. Fowler famously touted its merits in his book *The Octagon House, A Home for All.*[167] The development of the Octagon Movement, which promoted the shape as a way of increasing sunlight and ventilation, corresponded with mid-Nineteenth Century utopian ideals. Although the octagonal house trend was short-lived, popular only during the 1850s to the 1860s, the form lived on in barn design.[168] Like octagonal homes, octagonal barns offered a maximum space per wall material. By 1884, as many as forty octagonal barns had been built nationwide.

In the 1880s, agricultural experts, including Franklin King, were prophesying about round barns, an even more efficient design made possible by the introduction of lightweight balloon framing. Benton Steele, the nation's best-known round barn builder, constructed round barns in Kansas.[169] Steele was born in 1867 in Indiana, where he was first exposed to polygonal buildings through his great aunt, who commissioned an octagonal home. A self-educated carpenter, draftsman and architect, Steele began promoting his round barn designs in the *Indiana Farmer* from 1902 and 1909. In 1909, Steele moved to Halstead, Kansas. His traveling crew built barns throughout the Midwest, including at

Figure 49: Round Barn in Marshall County designed by Benton Steele. Brenda Spencer.

166 James Shortridge, "The Round Barns of Kansas," *Kansas History* v. 22, no. 1 (Spring 1999).
167 Lee and Virginia McAlester, *A Field Guide to American Houses* (New York: Alfred Knopf, 1984), 235.
168 Noble, *Barns of the Midwest*, 192.
169 Ibid, 197.

least five in Kansas.[170] Carpenter Patrick Cambell also built polygonal barns in Kansas. His designs included the Fromme Birney Barn (NRHP) near Mullinville in Kiowa County. Cambell built this sixteen-sided barn in 1912.

Many round and polygonal barns were constructed for dairy operations. Some, in fact, incorporated silos into their centers, allowing for ease of winter dairy feeding. Others, like that of Reverend Henry T. Biehler, were built to provide shelter for work horses and mules. Biehler hired builder Asa Aaratt to construct his round barn, which measured sixty feet in diameter, in 1914.[171]

The construction of Polygonal and Round Barn construction peaked in 1910, when hundreds were built in the Midwest.[172] They continued to be popular during the 1910s, when catalog companies advertised pre-cut Polygonal and Round barns. In its 1919 catalog, Sears Roebuck offered pre-cut round barns beginning at $1627 and octagonal barns beginning at $2123.[173] The vast majority of polygonal barns were constructed before 1930, by which time Gambrel-Roof and Arch-Roof Barns had supplanted them in popularity.

Polygonal and Round Barns are very rare in Kansas. They are most common in the state's Southeast Region, where they make up five percent of the barns surveyed. This likely corresponds to the region's being a center of dairy production in the first half of the Twentieth Century. There is a large Benton Steele-designed round barn on the Drenan Ranch near Blue Rapids in Marshall County (See Figure 51).

Figure 50: Midwest Prairie Barn in Coffey County. Brenda Spencer.

F. Midwest Prairie Barns

Description

Midwest Prairie Barns are identified by their wide sweeping roofs, horizontal massing, and gable-end entrances. This Property Type includes barns categorized by the National Park Service as "Prairie Barns" and by other sources as "Western Barns," "Midwest Three Portal," "Transverse Frame," and "Feeder Barns." Unlike Gable-Roof, Gambrel-Roof, and Arch-Roof

170 Per Noble, *Barns of the Midwest*, Chapter 10; Benton Steele published 16 articles on round barns (Noble, 198); John Hanou, *A Round Indiana: Round Barns in the Hoosier State* (West Lafayette, IN: Purdue University Press, 1993).; Marsh, 39.
171 Noble, *Barns of the Midwest,* 204. Unfortunately, the Biehler Barn burned in 1978 after a national register nomination was prepared by Richard Pankratz, State Historic Preservation Office.
172 Noble, *Barns of the Midwest*, 193.
173 Hunter, 28-29.

Barns, with their vertical emphasis, Midwest Prairie Barns are generally as wide, or wider than they are tall and wider than they are long. However, like the aforementioned Property Types, the Midwest Prairie design emphasizes hay storage, with prominent hay hoods and doors, as well as large haymows.

Midwest Prairie Barns can be found with both shallow gable roofs and gambrel roofs. Most gable examples feature a continuous roofline that slopes down nearly to grade. However, some have broken roof planes. The feature that distinguishes these examples from Gable-Roof Barns is the typical continuation of the haymow over the side bays. Some Midwest Prairie Barns have gambrel roofs with side shed bays on both sides that create a sweeping roof form.

The interior plans of Midwest Prairie Barns are generally similar to Gambrel-Roof and Arch-Roof Barns, with center aisles flanked by stall bays with full haymows on the second floors. Some examples were built for stacking hay from the ground level to roof with no haymow.

Significance

The Midwest Prairie Barn is the archetypal Kansas barn. From the beginning, Kansas farms were much larger than the national average, requiring large teams of draft horses and, in turn, tons of hay. Ranchers, who were managing ever-growing herds of longhorns and beef cattle in the Flint Hills and Southwest region beginning in the 1880s, required great amounts of hay to feed their herds during the long winter months. And Midwest Prairie Barns answered their call.

Figure 51: Midwest Prairie Style Barn in Dickinson County. Brenda Spencer.

Unlike their Gable-Roof predecessors, Midwest Prairie Barns were ordinarily balloon-framed, constructed entirely of sawn lumber.[174] Also called "Feeder Barns," Midwest Prairie Barns had striking similarities to ethnic Dutch barns, which also had low

174 Noble, *Barns of the Midwest,* Chapter 7.

roof lines and doors in the gable end.[175] In 1919, Sears catalog offered two feeder barns, one with a gable roof and another with a gambrel roof. They marketed the barns for their "abundance of loft roof for the storage of hay, roughage, etc."[176] Midwest Prairie Barns are most common in the state's Northwest Region, the state's western wheat belt.

G. Kansas Vernacular Barns

Description

Kansas Vernacular Barns are distinguished by the use of native materials, typically limestone, and complex roof forms. Because they are generally masonry construction, Kansas Vernacular Barns lack the large hay hoods and hay doors common among other barn types. Such openings would jeopardize the structural integrity of a masonry wall. Instead, they generally feature a small hay door on the gable end or broad side. The location of principal openings on Kansas Vernacular barns varies widely. The Kansas Vernacular Barns Property Type also includes barns with unique plans and roof forms. Many are square in massing with hipped roofs, gable-on-hip roofs, and gabled wall dormers. The majority of masonry barns that are not bank barns are classified as Kansas Vernacular Barns.

Figure 52: Kansas Vernacular Barn in Russell County. Brenda Spencer.

Significance

Kansas Vernacular Barns are significant because of the ingenuity they represent. They were often constructed of materials on hand, including stone often quarried on the farm. Like Gable-Front Barns, Kansas Vernacular Barns date from all periods of farm development. They are most common in the state's North-Central region, where they make up 11 percent of the barns surveyed. There are more stone barns in the North-Central region, where native stone was available, than in any other region, 30 percent of the barns surveyed. This region was also known for its corn and wheat production.

175 National Park Service, *Preservation Brief #20: The Preservation of Historic Barns.*
176 Hunter, 25.

H. Other Barns

Barns that do not fall into any of the above categories may be classified as "Other." Because the vast majority of barns fall into the above-described Property Types, this classification is rarely necessary.

Figure 53: Combination Corn Crib and Granary in Ottawa County. Brenda Spencer.

I. Corn Cribs

Description

The key character-defining feature of a corn crib is its open-slat construction, necessary for achieving maximum ventilation for corn stored on cobs. Often, corn cribs may be incorporated within Kansas barns or granaries. However, there are some examples of free-standing structures. Examples include octagonal structures with chevron-pattern slats, such as one surveyed in Collyer, and drive-in cribs with a central aisle flanked by two crib bays, such as those found west of Fairview in Northeast Kansas.[177] Some drive-in models incorporate both corn cribs and granaries under the same roof.

Figure 54: Granary (on-farm grain elevator) in Pottawatomie County. Brenda Spencer.

Significance

In early Kansas history, corn, not wheat, was king. Many Kansas emigrants hailed from corn-producing states like Iowa, Indiana and Illinois. Corn production increased in the post-Civil War years; between 1866 and 1878 the fledgling state climbed from 25th to 4th among the states in corn production.[178] After the 1874 grasshopper plague destroyed the corn crop, Kansas farmers began to place their hopes in wheat. Still, many continued to plant corn, particularly in the Northeast Kansas cornbelt and Nebraska border counties in the North Central region.[179]

177 Noble, *Barns of the Midwest,* 57.
178 Clanton, 202.
179 Call.

J. Granaries

Description
Like corn, grains were often stored in bins in the barn. However, on some farms, grain was stored in a separate structure known as a granary. Granaries typically take one of two forms: 1) a small, narrow, rectangular structure with gabled roof that is sometimes elevated on short piers or 2) a three-bay gabled-roof structure with drive-in center bay and grain storage down each side. Because they were designed to be filled with grain, granaries are distinguished by small square or rectangular doors for filling the bin. Besides this opening, granaries have few openings. Some masonry barns have high openings for filling and small square openings near grade for removing grain.

Some farmers not only stored their own grain but also ground it. For the purpose of grinding, storing and loading their grain, these farmers had their own grain elevators. On-farm grain elevators are included as primary farm structures under granaries. Like other granaries, on-farm grain elevators may be listed individually or as part of an intact farmstead. Examples of on-farm grain elevators include the Cross Farm in Edwards County (#196) and the Rinkes Farm near Holton in Jackson County (#337).

Significance
Granaries were built to store grains, such as oats, wheat and barley. Farmers stored oats to supplement hay as feed for their horses. They stored other grain to provide seeds for the subsequent planting season. Allen Noble ties granaries to German, Scandinavian and European immigrants. The *Hutchinson News* is full of accounts of granaries being destroyed by fire and tornadoes.

K. Secondary Stylistic Classifications

As noted in the introduction to Section F, the Property Types for Kansas barns and outbuildings are classified by outward appearance - including proportion, roof type, and building footprint. Although the vast majority of Kansas barns fit into the prescribed Property Types, it is important to provide additional information related to construction technique when possible. Examples of Secondary Stylistic Classifications are timber-framing and catalog barns. When it is known that a barn has one of these two secondary stylistic classifications, additional information should be included on both survey forms and national register nominations.

Figure 55: Close-up of timber framing in a Wilson County Barn. Brenda Spencer.

Timber-framed structures are identified by their post and beam construction, with hewn lumber secured by mortise-and-tenon

joints and/or pegs. Because the vast majority of timber-framed barns pre-date 1900, they are most common in the earliest-settled eastern half of the state. They make up 12 percent of the barns surveyed in the Northeast Region and 15 percent of the barns surveyed in the Southeast Region. Timber framing was often used in interior construction of masonry barns. Timber-framed barns should be classified by their Property Type first, then by their timber-framed construction as a secondary classification.

Kit barns or mail-order barns are identified by stenciled numbers on framing members, paper company labels, or metal tags. Catalog barns, farmhouses, and other outbuildings could be ordered from catalog companies such as Sears, Montgomery Wards, Louden and Aladdin in pre-cut kits, or built from standard plans available from lumber companies. Mail-order barns come in all shapes and sizes. Therefore, it is important to classify them first by Property Type, and secondly by secondary classification as kit barns. Kit barns are most commonly found in the later-settled regions of the state. Seven percent of the barns surveyed in the Southwest region were documented kit barns.

J. Farmhouses

Description

Kansas farmhouses vary greatly in form and function depending upon their location, period of construction and the resources, both financial and natural, of the farmers who built them. Although Kansas farms are, and always have been, larger on average than those in the Upper Midwest, Kansas farmhouses are smaller. While a few of these farmhouses can be classified as high-style architecture, most are vernacular. When farmhouses fall into the architectural classifications identified in National Register Bulletin #16a or McAlesters *A Field Guide to American Houses,* they should be classified accordingly. Vernacular homes should be further classified using the typology identified by Fred Peterson in his book *Homes in the Heartland: Balloon Frame Farmhouses of the Upper Midwest, 1850-1920*. Masonry homes, which were often built from limestone or sandstone quarried on the farm site, generally fall into Peterson's typology, even though they are not balloon framed.

Figure 57: Kansas farmhouse. Brenda Spencer.

Significance

Like barns, Farmhouses help interpret a farm's history, geography, and development over time. The state's first farmers constructed homes and outbuildings using materials they hauled overland in wagons or from resources found on their claims. Many lived in covered wagons, tents or rudimentary "hotels" before constructing log cabins or frame homes. Farmers who had access to stone, in the Flint Hills and Sand Hills, constructed stone homes and outbuildings. In Central and Western Kansas, where trees were scarce and prairie grasses were thick, farmers relied upon sod for homes well into the early Twentieth Century.

Figure 58: Cloud County Farmhouse. Brenda Spencer.

By the late Nineteenth Century, many Eastern Kansas farmers had replaced their small original homes with balloon-frame models, sometimes putting the original dwelling into secondary use as a summer kitchen or overflow living space. Construction of new farm homes peaked in good times. For instance, in the years following World War I, when farmers reaped the rewards of record-high crop prices, many replaced their soddies with bungalows or foursquares, which in 1917 cost between $700 and $900 to build.[180] Although the Kansas Agricultural Experiment Station bulletin argued that "The house plan that is needed by the farm owner cannot be found. It must be built," many farmers ordered both homes and barns from catalogs, which like extension agents stressed efficiency in home design.[181]

Although the nation's economy remained strong through the 1920s, declining crop prices left many farmers unable to make payments on existing property and equipment, let alone commission new homes. The farm families who had managed to ride out the dust storms and economic decline of the Great Depression were living in humble conditions by 1940 when the Kansas State Agricultural College conducted a study of 17,929 rural Kansas homes. The study found that only 21.4 percent of Kansas farms homes had fully equipped bathrooms – and only 13.2 percent had electricity. The fact that 73 percent of the families surveyed decorated their homes with calendars illustrates that few could afford more than bare necessities.[182]

180 HP Plan, 1900-1940, 35.
181 HP 1900-1940, 34.
182 Rachel Martens, *The Furnishings of 290 Rural Kansas Homes.* Masters Thesis, Kansas State College of Agriculture and Applied Science, 1940, 7, 8, 50.

Like the population as a whole, farm families responded to a pent-up demand for homes in the post-war years. Between 1948 and 1952, the Kansas extension service helped plan over 22,220 farm home remodeling projects and the construction of nearly 5000 new homes.[183] During the 1950s and 1960s, ranch houses prevailed. Many of the homes now on historic farmsteads were built during this period.

II. Secondary Farm Structures and Features

Unlike barns, which were often constructed to cater to a variety of uses, secondary farm structures were generally constructed to serve very specific singular purposes. These structures fall into three primary categories: 1) buildings directly related to agricultural operation, 2) buildings related to domestic operation, and 3) features.

Additionally, secondary farm buildings, such as Quonset Barns, Hay Sheds, Loafing Sheds, and Milk Barns are distinguished from Barns because they, unlike barns, were rarely the primary farm structure. These structures were typically built for a specific use that was meant to complement the main barn, not replace it. Below are descriptions and histories of these utilitarian structures.

Secondary Farm Structures Related to Agricultural Operation

Figure 59: Chicken House in Trego County. Brenda Spencer.

A. Poultry Houses

Description
Chicken Coops and other Poultry Houses, often identified by their shed roofs, are generally located near the house or barn, depending on whether the man or woman was responsible for the care of the poultry. These buildings are designed to maximize light and ventilation, with large south-facing openings, many with clerestory windows and a few with monitor roofs.[184] This category also includes brooder houses, typically small rectangular structures with gable or shed roofs with single openings. These buildings were designed to house brooding hens, which were separated from other chickens. A 1951 study showed that 94.4 percent of

183 "Houses for Farm Families with Children," *Agriculture Experiment Station Bulletin* 365 (June 1954).
184 HP Plan, 23.

Kansas Poultry Houses were made of wood. 1.6 percent of them were concrete.[185]

Significance
Because most early Kansas farmers were subsistence farmers, most raised chickens and other poultry for their own consumption. As farming became more industrialized and specialized during the Golden Age of Agriculture (1900-1920), some farmers entered poultry production on a larger scale. In 1916, the farm publication *Farmers Mail and Breezes* announced that "Kansas has more poultry in proportion to population than any other state ..." and that "Kansas could, profitably, raise two or three times as many fowls as now."[186] Poultry production was most common in the state's extreme Southeast Region, in Wilson, Neosho, Crawford, Montgomery, Labette and Cherokee Counties, where farmers experienced the longest growing season and heaviest rainfall.[187] However, most farms had chicken houses for chickens that provided both eggs and meat for farm family subsistence.

B. Milkhouses

Description
Beginning in the early Twentieth Century, sanitation laws mandated that milkrooms be physically separated from barns. To meet these requirements, farmers built separate milkhouses, small buildings constructed to provide space for milking and house the necessary equipment, including iceboxes, heaters, sinks, separators, coolers, churns and vats.[188] These small buildings were often built of concrete blocks or tile. They were generally well-insulated, with limited ventilation.[189] The Kansas Agriculture Experiment Station, which in the 1920s offered ten standardized plans for milkhouses, promoted models with hipped and shed roofs. Milkhouses were generally placed adjacent to barns – or located in a connected bay.


Figure 60: Milkhouse in Montgomery County. Brenda Spencer.

Significance

185 "A Poultry Survey in Kansas," *KSAC Agriculture Experiment Station Bulletin* 350 (December 1951).
186 Coburn.
187 Call.
188 "Dairy Buildings for Kansas," Kansas Agriculture Experiment Station Bulletin 236 (Nov 1925).
189 Noble, *Barns of the Midwest,* 140.

Before Twentieth-Century advances in refrigeration, milk was a cottage industry, with farmers providing milk only for their families and neighbors. Like poultry production, the dairy business became more specialized and industrialized during the first two decades of the Twentieth Century. With advances in refrigeration, sanitation and transportation, the state's dairy production increased 300 percent from 1910 to 1920 – and the number of Kansas farmers selling butterfat nearly doubled to 60,000 between 1914 and 1924.[190] Many Kansas farmers began raising dairy cattle as a way of subsidizing their income and riding out hard times. In the 1920s, the majority of Kansas farms had between 1 and 4 cows.[191] By 1940, however, large-scale dairy farming was common in the Kaw River Valley, in the Kansas City, Topeka, Leavenworth, and Lawrence metropolitan areas, considered the "most important whole-milk section in the state," as well as in southeast Kansas, particularly where condensaries in Bourbon and Allen Counties created a market for local milk.[192]

C. Milk Barns/Sheds

Description
Milk Barns or Sheds are typically small rectangular frame structures with gable or shed roofs and wood sidings. These buildings, which were designed specifically for milking, were built to replace milking stanchions, which were generally located within the barn proper prior to the passage of sanitation laws in the early Twentieth Century.

Significance
Milk Barns and Sheds are interpretive of the industrialization of farming during the Golden Age of Agriculture when some farmers shifted from subsistence farming to specialize in dairy production. These specialized structures were built to comply with the stricter sanitation laws that were passed to ensure public safety.

D. Loafing Sheds

Description
Loafing Sheds, also called "Loafing Barns," are designed to provide shelter for animals outside main barns. Early Loafing Sheds were often constructed with masonry, having solid walls on the north, east and west, with open entrance bays on the south. Post-World-War II Loafing Sheds often have metal walls.

Significance
Because animal shelter was essential and Loafing Sheds required less manpower and materials than barns,

190 Call, 18.
191 "Dairy Buildings."
192 Call, 13.

Loafing Sheds often pre-date barns. Farmers continue to build Loafing Sheds with steel walls to protect from prevailing north winds.

E. Pole Barns

Description
Pole Barns are so named because their roofs are structurally supported by poles. Unlike Loafing Sheds, some Pole Barns have no walls. Also, they are generally larger than Loafing Sheds as they are generally designed to protect hay or farm implements from the weather. Poles may be made of logs, wood posts, or, later, steel columns. These structures were often built to store hay or farm machinery. They have no hay lofts.

Significance
Pole barns gained favor in the years following World War II, when H. Howard Doane and Bernon George Perkins patented a technique for constructing Pole Barns. The pair framed their buildings with creosoted, pressure-treated poles and sheathed them with 2 X 4s. This created a system that required less labor and materials than earlier barn designs. By the 1960s, farmers could employ lumber-rigid framing to create post-free interiors for their pole barns.[193]


Figure 60: Quonset Barn in Haskell County. Brenda Spencer.

F. Quonset Barns

Description
Quonset Barns are distinguished by their rounded arch roofs, which generally extend to the ground, but may also terminate in a vertical wall. They are constructed of corrugated steel and were partially pre-fabricated and assembled on site. This approach created structures known for their durability, utility and efficiency.

Significance
Quonset Barns or Quonset Huts were popular in the years immediately following World War II. The name "Quonset" comes from Quonset Point, the first place where Quonsets were installed by the George A. Fuller Construction Company during the war. Many of these buildings were surplused by the federal government and purchased by civilians, who converted them to barns, businesses and even homes, in the immediate postwar years when

193 Noble, *Barns of the Midwest*, 225-226.

construction materials were still scarce. Other manufacturers continued to market the versatile buildings for civilian use. Among them was Great Lakes Steel Corp. of Detroit, who promoted Quonsets as "fire-safe, rot-proof, sag-proof, termite-proof and age-resistant." Quonset Huts are common on Kansas farms, where they are often used for storage.[194]

G. Boxcar Barns/Sheds

Description
Boxcar Barns may be unaltered boxcars or structures that incorporate boxcars. In some cases, boxcar barns are three-bays wide, with boxcars flanking a center drive-through bay and all three bays covered with a shallow-gabled roof.

Significance
Boxcar barns were common in periods of financial distress or periods of labor and materials shortages, such as the Great Depression and World War II. These barns are most common in Southeast Kansas. They represent the ingenuity of farmers, who used any available materials to fulfill their needs for space.

Figure 61: Boxcar barn in Haskell County. Brenda Spencer.

Secondary Farm Structures and Features Related to Residential Functions

Whereas some secondary farm buildings relate directly to a farmstead's agricultural function, others more closely relate to the farm household and are, therefore, tied geographically and stylistically to the farmhouse. These buildings are often located within close proximity to the farmhouse. Because they were built to support household or domestic activities, such as food production and laundry, they were often constructed in tandem with the farmhouse. Therefore, many of these buildings relate to the farmhouse in their style and materials. For instance, if a farmhouse was built of native stone, the washhouse and smokehouse were also likely to be built of native stone. In rare instances, these buildings took on high-style architectural features, such as Gothic Revival or Queen Anne.

194 Noble, *Barns of the Midwest*, Chapter 11.

H. Springhouses

Springhouses were used to protect and harness spring water to keep milk and other farm products cool. Springhouses were generally either built into a slope or located at the base of a slope. The buildings, which are generally masonry construction, often have ventilation louvers.[195] Springhouses are quite rare in Kansas.

Figure 62: Tankhouse in Decatur County. Brenda Spencer.

I. Washhouses

Washhouses were built to house the arduous task of washing the family's laundry in the years before water heaters and washing machines. These buildings generally are rectangular in form with a gabled roof. They are distinguished by chimneys, which served the purpose of ventilating woodstoves used for heating wash water.

J. Tankhouses

Domestic Tankhouses allow water to flow via gravity from an elevated tank into the house or barn. Tankhouses are common in west coast and Plains states, including Nebraska, Colorado, Oklahoma, Texas and Kansas.[196] Although these structures are disappearing, they are still found in the arid regions of Western Kansas, where farmers relied upon windmills to pump water from deep wells. Tankhouses take on various forms, from simple rectangular shapes with gable roofs to octagonal or round masonry structures resembling small water towers.

K. Storm Cellars/Root Cellars

Underground cellars were built to store vegetables and protect farm families during severe weather. These structures were sometimes built into hills and featured a hatch door with a north or east orientation.[197]

195 Noble and Cleek, 140.
196 Noble and Cleek, 142-144.
197 Noble, *Barns of the Midwest*, 138.

L. Summer Kitchens

In an era of poorly insulated wood-burning stoves and ovens, Summer Kitchens helped keep homes cooler in the summer months. In addition, they helped keep potential fires from destroying their more valuable homes. Summer Kitchens, which were sometimes converted starter homes, were generally located near a home's rear door so as to provide convenient access to the kitchen and dining room. Summer Kitchens were no longer necessary after the 1930s and 1940s when farms received electric service and replaced their wood-burning models with better-insulated and efficient electric stoves. Summer Kitchens are associated with Pennsylvania German and German-Russian immigrants.[198] There is an excellent example of a native stone kitchen on the Steinle Farm near Dorrance in Russell County (Figure 65, below). They are rare in Kansas.

Figure 63: Summer Kitchen in Russell County. Brenda Spencer.

M. Smokehouses

Smokehouses were used for curing meats by smoking them. This technique for preserving meat was essential in the days before refrigeration. Like Summer Kitchens, Smokehouses are rare. They are identified by their small size, lack of windows and gable-end doors. To help ensure fire resistance, most are constructed of masonry. Like Washhouses, Smokehouses always have a chimney to ventilate the fire necessary for producing smoke. An example can be found on the Doubrava Farm in Ellsworth County (#77).

N. Outhouses

In 1940, only 21.4 percent of Kansas farm homes had fully equipped bathrooms. Many Kansas farm families relied on outhouses well into the Mid Twentieth Century. Outhouses were generally located far enough from the farmhouse to isolate the foul smell, but close enough to provide for easy access from the house. Most outhouses were one-hole models. They generally featured tall ceilings with ventilated gabled or shed roofs. Some were more elaborate models – two-holers

198 Noble, 146.

or stone buildings, as at the Spring Hill Ranch in Chase County. Outhouses, also called "privies," have become increasingly rare.[199]

Other Features

O. Silos

Description
The majority of Kansas silos are cylindrical reinforced concrete models constructed beginning in the 1910s. Early wood examples are rare. As are hollow clay tile, concrete block, stone, and brick models. Silos are generally located adjacent to a barn. Some are integrated with barn construction, as in the case of some polygonal and round barns and at least two surveyed gable and gambrel-roof barns, where they were attached to the gable and gambrel ends. Silos are essential on dairy farms where farmers rely upon silage to sustain dairy cows through the winter months.

Significance
Silos are structures built for the sole purpose of housing silage, green roughage stored for consumption by farm animals, mostly dairy cattle, during the winter months. Because the first silos were large underground cavities, they were named after the French word for "pit." Silos are made to preserve roughage or silage by sealing out moisture and air. As the upper layer of silage begins to decay and warm, it converts the surrounding air into carbon dioxide, thereby preserving the layers below it. [200]


Figure 64: Barn and Silo with original sheet metal. Edwards County. Brenda Spencer.

Although farmers began storing silage as long as 3000 years ago, silos were not commonly found on Anglo-American farms until the late Nineteenth Century. After French farmer August Goffart's book on the subject was translated into English in

199 Noble and Cleek, 139.
200 Barlow, 75.

1879, American farmers began to place faith in the idea.[201] According to a USDA study, 99 American farmers had silos by 1882.[202]

The first commercially marketed silos, available beginning in the 1890s, were polygonal and cylindrical wood structures measuring 30-46 feet in height. They were built like barrels, with wood staves secured by metal hoops. In the early Twentieth Century, silos were constructed using concrete blocks, poured reinforced concrete, and hollow clay tile. Some farmers built inexpensive trench silos, lining long and narrow excavated pits with stone and, later, reinforced concrete. Others built crib silos using wooden stakes, wire fencing and, even paper. Reinforced concrete cylindrical silos, built in a fashion similar to concrete grain elevators had become the industry standard by the mid Twentieth Century. Initially, farmers hired crews to load their tall silos. As farms became more mechanized, farmers began to load silos with chutes, blowers and chain conveyors. Today, steel and glass-lined silos, such as the blue models manufactured by Harvestore, have become common.[203]

Figure 65: Windmill exhibit. Finney County Fair, 1894. Courtesy Kansas State Historical Society, kansasmemory.org.

P. Windmills

Description
Windmills, which are found in a variety of models and styles, are an enduring legacy of Kansas farmers' dependence on water. Today, windmills often mark the spot of an abandoned homestead, long after the buildings have collapsed or been demolished.

Significance
Windmills were essential on Kansas farms, where surface water was scarce. Most farmers, particularly in Western Kansas, relied upon deep wells – and windmills to pump water from them. The earliest wells were dug by hand, until the mid-1880s when steam and horsepower drills eased their labor. The ability to drill deeper wells using efficient powered drills allowed farmers to populate increasingly more arid regions.[204] In the west,

201 Siefers, Mary Kay, PhD Final Exam Seminar, KSU Oct 26, 2000.
202 Barlow, 75.
203 Siefers. Barlow, 75. See http://www.oznet.ksu.edu/pr_silage/presentations/MK percent20History percent20Oct. percent2026, percent202000 percent20edit_files/frame.htm
204 I-42

windmills pumped water from the wells into stock tanks and domestic tankhouses.[205]

Cash-strapped farmers could build their own wood windmills with less than two dollars worth of materials.[206] With this small investment, a farmer could pump enough water to irrigate ten acres or water 75 head of cattle. As farmers moved west, and the market for windmills grew, a growing number of firms began to produce inexpensive models. By 1879, the nation had several dozen windmill manufacturers, which reported $1 million in annual sales. Sales doubled by 1889.[207]

By the turn of the century, a number of companies marketed all-metal windmills. Among the area windmill manufacturers were the U. S. Wind Engine and Pump Company, which made Halladay Standard Windmills in Kansas City, Missouri.[208] The Currie Windmill Company, which operated in Solomon City, Manhattan and Topeka, Kansas, manufactured its line of "poor man's windmills" from the 1890s until World War II.[209]

Farmers carefully planned the location and design of their windmills. In his course on rural residences, Kansas State University Professor J. D. Walters recommended the following design and placement:

The windmill should not be hidden, but it should not be placed in the foreground. Its proper location is at some distance in front of the barn, but not too close to the house. The water should be pumped from there through galvanized iron pipes to a reservoir and led there to the house, the stables, the lawn, and the garden. Neither animal nor man should be allowed to obtain water at the foot of the wind mill. The windmill tower should be planted around it and it should be ornamented with ornamental climbers.[210]

When rural areas received electric service, beginning in the 1930s, farmers were able to pump water with electric pumps, lessening the need for windmills.

Q. Fencing

205 T. Lindsay Baker, *A Field Guide to American Windmills* (Norman: University of Oklahoma Press, 1985), 51.
206 Barlow, 87.
207 Ibid.
208 Ibid, 86.
209 Baker, 107, 178-179.
210 "Residences: A Course of Lectures Delivered by Prof. J.D. Walters, 1905-1906." Printed Lectures, Kansas State Agricultural College, 1906, 9.

Description

The construction of fencing in rural Kansas has generally been limited by materials on hand. For instance, a dearth of trees meant that wood fencing was generally not an option. The earliest fences are native rubble limestone or sandstone. After 1880, the majority of Kansas farms were fenced with barbed wire. Some farmsteads retain residential fencing, such as twisted wire and picket fencing, in the area around the house.

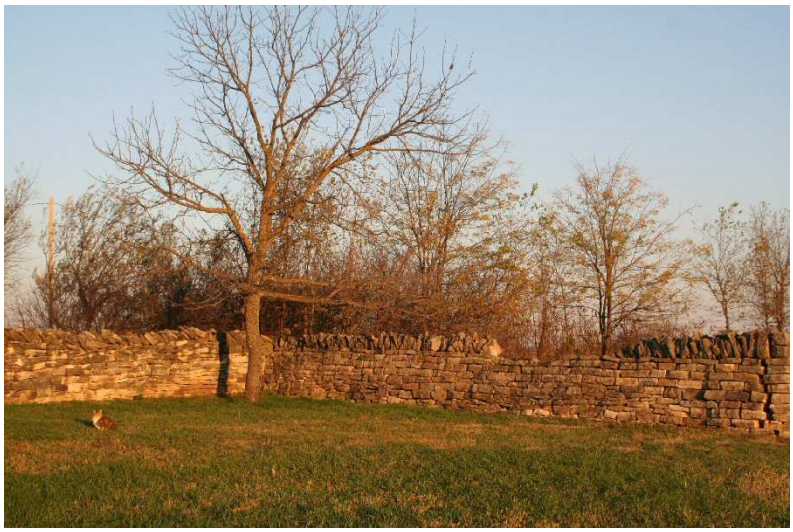

Figure 66: Stone Fence. Brenda Spencer.

Significance

During the state's formative years, fencing was essential not only to establish property lines on the state's sprawling farms but also to protect crops from damage from open-ranging cattle. In the years that followed, Kansas farm fences continued to reflect the state's natural resources and the thrift and ingenuity of Kansas farmers.

In an effort to encourage fencing, the Kansas Legislature passed "An Act to Encourage the Growing of Hedge and Building of Stone Fences" in 1867. Until 1887, the program paid farmers $2.00 per year for each four rods (22 yards) of fence.[211] Where trees could be found, farmers constructed fences using logs and boards. James Bell, who settled near Abilene in the late 1860s, spent $1200 enclosing his entire 200-acre farm with board fence by 1870.[212] When Bell finished his fence, only 39 percent of the state's fences were built of wood, a scarce resource on the windswept plains.[213]

The majority of early Kansas farmers fenced with stone, which could be acquired from fields or on-site quarries. They enclosed animal pens, barnyards, and sometimes their entire properties with dry-laid limestone walls, built in a battered form from wide bases.[214] Although some farmers built stone fences with hired labor, many built their own during the slow winter months.

By 1880, barbed wire provided a cheap, fast and easy alternative to wood and stone. First manufactured in 1874, barbed wire, like any new technology, had its critics. The *Chetopa (Kansas) Democrat* published an account of cattle that were electrocuted when lightening struck the barbed wire they were touching: "Verily, the deadly barbed wire gets in its work in

211 I-43
212 Malin 28.
213 I-42
214 Martin, 18-23.

more ways than one."[215] Despite its detractors, the new product proved its merits to become the West's preferred fencing material. In 1886, manufacturers produced 270,000 miles of the lauded substance.[216]

In most regions, farmers stretched barbed wire between split wood posts, securing it with metal staples. However, trees were so scarce in North-Central Kansas that farmers and ranchers came to use stone posts, known as post rock.[217] They secured the wire to the posts by wrapping it around the posts, or by drilling holes in the posts for fasteners. In the early Twentieth Century, farmers and ranchers could buy stone posts for between 3 and 5 cents each.[218] Because post-rock fences are unique to Kansas, and are becoming increasingly rare, they merit further documentation and preservation.[219]

A related cultural landscape feature is the hedgerow. Hedgerows were planted not only to mark property lines, but also to ferocious plains winds that could wreak havoc on crops. In the late nineteenth and early twentieth centuries, Kansans planted 95,596 miles of windbreaks. Over 40 percent of these, 39,400 miles, were Osage Orange hedge.[220] The trend continued after the Great Depression, when the newly formed Soil Conservation Service promoted the use of hedgerows to slow the erosion of topsoil.

R. Farm-related Implements and Machinery

Description
These features may include, but are not limited to, historic threshing machinery, irrigation systems (pumps, ditches, machinery), and other implements that are historically related to the nominated property. The features must have a documented historical association with the nominated property to be eligible for inclusion for the National Register under this Multiple Property Documentation Form.

Significance
Machinery and implements have been a part of the rural landscape since the earliest Euro-American settlers arrived in Kansas. Kansas' agricultural buildings and structures reflect the influences of the advancement of machinery. Between 1850 and 1860, annual sales of farm machinery in the United States tripled from $7 million to $21 million. New seed drills not only doubled the speed by which seeds were sown, but also helped ensure the seeds, formerly broadcast by hand,

215 *Chetopa Democrat*, 25 May 1889; Skeen, 14.
216 Martin, 43.
217 Martin, 43-61.
218 Grace Muilenburg and Ada Swineford, *Land of the Post Rock: Its Origins, History, and People* (Lawrence: University Press of Kansas, 1975), 52.
219 Henry D. and Frances T. McCallum, *The Wire that Fenced the West* (University of Oklahoma Press, 1965).
220 John J. Winberry, "The Osage Orange, a Botanical Artifact," *Pioneer America*, 11 (1979), 134-141.

would not be carried away by birds or wind.[221] Lever-operated corn planters resulted in a 2000 percent increase in a farmer's productivity.[222]

As farmers transitioned from animal-powered machinery to tractors, draft animals, and the hay to feed them, were no longer necessary. At the same time, in the 1930s, the first portable hay balers, which could gather, bale and tie hay in one motion, were available. Balers could condense loose hay from five pounds per cubic foot into bales that held 40 pounds per cubic foot. These dense small bales could be stored with ease and in less space. In the 1960s, the technological contributions of two Kansans, agricultural engineer Wesley F. Buchele and Hesston Corporation's Lyle Yost, led to the development of large round bales, which could be covered and stored on the ground.[223] So, even farmers, particularly dairy farmers, who still relied upon hay, no longer required vast storage space. In the post-World War II years, one-story steel machine sheds and storage buildings supplanted wood-frame barns.

III. Other Agriculture-Related Buildings

This Property Type includes buildings that are associated with farm production and the state's agriculture industry, but not located on farms. Other Agriculture-Related Buildings includes Grain Elevators and Mills, described below. As additional agriculture-related buildings are identified and studied, this MPS may be amended to include them.

A. Grain Elevators

Description
Grain Elevators are generally rural Kansas communities' largest and tallest buildings. Nearly every Kansas town has at least one tall reinforced concrete model. These structures, which can be visible for up to 100 miles, often have a community's name emblazoned on them. Some communities or historic rail stops retain their wood-frame elevators, which were often covered with corrugated metal to protect them from fire. Although grain elevators have relatively simple exteriors, they

Figure 67: Wood-frame grain elevator. Courtesy Kansas State Historical Society, kansasmemory.org.

221 James Malin, *Winter Wheat in the Golden Belt of Kansas: A Study in Adaptation to Subhumid Geographical Environment* (Lawrence: University Press of Kansas, 1944), 20.
222 Ronald Stokes Barlow, *300 Years of Farm Implements and Machinery, 1630-1930* (Iola, WI: Krause Publications, 2003), 44.
223 Robert L. Marsh, *Barns of Kansas: A Pictorial History* (Robert Marsh, 2003), 13.

have complex interiors constructed for the purpose of elevating grain through buckets and conveyors and dispensing it through gravity into grain cars for shipment.

Significance
Grain elevators were first invented in Buffalo, New York in 1842. Urban elevators in large port cities and transportation centers like Buffalo held grain shipped on railroad from smaller rural elevators. The first Kansas elevators date to the late Nineteenth and early Twentieth Centuries, when farmers organized to form cooperatives to maximize prices for farm commodities. Like early silos, these first elevators were constructed of wood. The majority were built using a cribbed construction technique whereby dimensional lumber was held together by metal spikes and built up into interlocking walls. Examples of cribbed construction include elevators in Plainville, Mentor and Leona. Many wood grain elevators were studded, or balloon-framed, which was cheaper than crib construction. Kansas has more studded grain elevators than any other state, with examples in Wellington, Rock, Attica, Cambridge, White City, Latimer, Ness City, Alexander, Lucas, Plainville, LaCross, Glade, Moline and Burden. Such elevators are generally 7-11 stories in height.

Before the common use of reinforced concrete, many communities experimented with brick, hollow clay tile, and steel in building fireproof elevators before 1930. There are tile elevators in Danville, Harper and Sharon. Steel elevators, like one found in Kinsley, are extremely rare. With early Twentieth-Century advances in reinforced concrete construction, concrete became the material of choice for both rural and urban grain elevators, allowing elevators to rise an additional 30 to 40 feet in height. Rural elevators store grain from local farmers and ship it on the railroad to urban elevators in rail centers, whose elevators are equipped to sort and clean the grain. Kansas has both rural and urban concrete grain elevators. The urban elevator in Hutchinson is the world's longest grain elevator.[224] As Kansas farmers begin to specialize their wheat crops, creating boutique strains of wheat for gourmet breads, large grain elevators, built to house one type of wheat, are becoming obsolete.

B. Mills

Description
In larger cities, grain elevators are often accompanied by mills, which processed the grain into flour, feed and other consumables. The state's mills vary in construction and appearance depending on their date of construction and locally available materials. Like early elevators, many early mills were wood-frame construction. Like wood-frame elevators, wood mills were very susceptible to fires and explosions and were often replaced with masonry structures. Well-known masonry examples include the rubble limestone water mills at Oxford (1874) and Cedar Point, and the dressed and rubble limestone Newton Milling Company in Newton (1879). Others, like the Kelly Mill in Hutchinson (1904), were built of brick. By the 1910s and 1920s, milling companies were building high-rise reinforced concrete facilities, usually with industrial steel sash or structural

224 Lisa Mahar-Keplinger, *Grain Elevators* (New Jersey: Princeton Architectural Press, 1993).

glass block curtain walls.

Significance

For over a century, Kansas has been the largest wheat-producing state in the US, today producing nearly one-fifth of the nation's wheat.[225] The state's dominance in wheat production and the related milling industry have earned it the title "Breadbasket of the World."

Milling has been a part of the Kansas economy for nearly two centuries. The state's first mills were built by the federal government under the conditions of pre-Territorial Indian treaties. The first of these water-powered mills, located on Mill Creek south of the Kaw River, was built in 1831 for the Shawnee Tribe. Immigrant Indian Mathias Splitlog built the first privately funded mill at Wyandotte in 1852. During the Territorial period, from 1854 to 1861, the New England Emigrant Aid Company constructed mills at its free-state outposts. Like many early mills, the territory's first steam-powered mill, built in Wyandotte County in 1858, milled both lumber and flour.[226]

Figure 68: Cedar Point Mill (NRHP). Kansas Travel and Tourism.

In the years before the railroad, the market for Kansas grain was localized. Early settlers, who produced grain for personal and community use, traveled an average of 50-75 miles to have their grain milled.[227] It was not until the railroad and settlers reached South-Central Kansas that wheat became a cash crop.

Kansas first rose to wheat dominance during the 1870s when environmental conditions, market access, and agricultural technology aligned to create the ideal climate for wheat's ascendancy. Kansas farmers saw winter wheat as a safe bet after the wheat crop survived the drought and grasshopper plagues that destroyed all other crops in 1874. Between 1870 and 1885, the number of Kansas acres

225 Kansas Association of Wheatgrowers.
226 US National Youth Administrations.
227 Ibid.

planted in wheat swelled from 156,200 to 2,290,549.[228] Between 1868 and 1878, the state climbed from 24th to 1st in wheat production as Kansas farmers shifted from subsistence farming to cash-crop production.[229]

As the Atchison, Topeka and Santa Fe Railroad stretched west during the 1870s, it attracted farmers to the wheat-producing region of Central Kansas. The railroad brought settlers and agricultural implements west and shipped grain east for milling. Until the waning years of the Nineteenth Century, railroad freight guidelines, which made grain cheaper to ship than flour, made local milling cost prohibitive. In 1874, there were only 80 water-powered mills and 59 steam-powered mills in the state.[230] By the time new freight regulations boosted the state's milling industry in the 1890s, most of the state's mills were equipped with new steel rollers, which were proficient in grinding hard winter wheat. Soon, Kansas wheat was being milled at home, sometimes in mills near grain elevators, which first came on to the scene in the 1890s. By 1900, there were 533 mills in the state.[231]

Wheat production and milling activities continued to evolve in the early Twentieth Century. Between 1900 and 1919, the state's annual wheat production averaged more than 89 million bushels. The Great War created a worldwide demand for American wheat, driving up wheat prices for Kansas farmers. The United States produced for Europe, where the majority of farmers were engaged in the war. Demand was high and supply was relatively low. Kansas farmers answered the call to supply more wheat for war-torn Europe, producing more than 100 million bushels more than any other state during the war years and, one year, one-fifth of the nation's wheat crop.[232] During the war years, as farmers adopted labor-saving practices, including the use of tractors and new implements, the number of man-hours it took to produce 100 bushels of wheat was halved.[233]

As production expanded, Kansas cities escalated wheat trading and milling activities. In 1892, Topeka was the nation's second-largest milling center.[234] Between 1890 and 1895, Wichita was the "greatest wagon wheat market in the United States." Fourteen Wichitans founded the Wichita Board of Trade, the state's first grain exchange in 1903. Hutchinson organized its own Board of Trade in 1910. Between 1910 and 1916, the receipts from the Wichita Board of Trade members had ballooned from 6,874 to 19,783 car lots. By 1928, Wichita and Kansas City were among the nation's top five milling markets (the others were Minneapolis, Buffalo, and Portland, Oregon), Kansas ranked third among the states in milling -

228 Malin, *Winter Wheat*.
229 Clanton.
230 US National Youth Administration, 24.
231 Ibid, 31-32.
232 LE Call, *Agricultural History of Kansas* (Bellows Reeves Company, 1921), 13. Kansas State University Special Collections. Kansas State Historical Society.
233 Kansas State Historical Society Historic Preservation Department, *A Time of Contrasts: Progress, Prosperity, and the Great Depression, 1900-1940* (Kansas State Historical Society, 1990), 33.
234 Miner, *Kansas*, 340.

and grain executives amassed small fortunes.[235]

Although increased production drove down crop prices in the postwar years, farmers continued to invest in labor-saving devices and production continued to increase. Tractors could pull increasingly sophisticated implements, including combines, which combined the process of harvesting and threshing wheat. Between 1919 and 1920 alone, Kansas farmers bought 1500 combines. By 1930, 27,000 of the nation's 75,000 combines were in Kansas. Custom cutters purchased the first combine models in the late nineteenth and early twentieth centuries. In 1926, however, when more affordable combines were introduced, many farmers purchased them to harvest wheat, sorghum and milo.[236] The Hutchinson area took the lead in the use of gasoline-powered combines, which could harvest wheat four times faster than earlier models. The first self-propelled combine was used near Hutchinson in 1923.[237] The state's enthusiastic acceptance of new agricultural technology resulted in its production of 25 percent of the nation's wheat in 1930.238

The state's milling industry followed suit. During the 1930s, Kansas was home to three of the nation's five largest milling centers (Buffalo, Minneapolis, Kansas City, Wichita, and Salina), producing ten to fifteen percent of the nation's supply of flour.[239] And Hutchinson was one of the state's five largest milling centers, along with Wichita, Salina, Topeka and Kansas City.[240] By that time, 75 percent of Kansas flour was sold to large commercial bakers who had cornered the bread market following the 1928 invention of sliced bread.[241]

Production ramped up again during World War II when nearly 50 percent of the nation's custom cutting crews were based in Kansas.[242] During the war, the annual net income of southern plains wheat growers exploded by 2000 percent.[243] In the postwar years millers competed in the new international market, shipping increasingly larger units of flour to chain stores and industrial bakers for worldwide distribution. Most locally owned mills could not compete. In the new postwar economy, many sold out to corporate conglomerates like Cargill and ADM.

IV. Registration Requirements - Integrity

235 A. E. Janzen, "The Wichita Grain Market," *Kansas Studies in Business*, (Lawrence, Kansas: School of Business, no. 8, June 1928).
236 Isern, 13-15.
237 "Topics in Kansas History: Agriculture," Kansas State Historical Society, http://www.kshs.org/research/topics/agriculture/index.htm.
238 Miner, *Kansas*, 286.
239 US National Youth Administration, 44-46.
240 Ibid, 34.
241 Paul Wenske, "History of sliced bread little known on 75th anniversary," *Kansas City Star*, 29 July 2003.
242 Isern, 31-38.
243 Grant, "Food Will Win the War."

In order to be eligible for listing in the National Register of Historic Places, a property must generally be at least fifty years old and retain historic integrity, measured by the National Park Service using the following seven qualities: location, design, setting, materials, workmanship, feeling, and association. In addition, a property must meet one of four additional criteria: A) historical significance, B) association with a significant person, C) architectural significance, or D) significance for its ability to yield information about the past. Below is a summary of each of the qualities of integrity as they apply to agriculture-related resources:

Figure 69: The Thomas County Historical Society moved the Cooper Barn, the largest barn in the state, in 1992.

A. Integrity of Location – Moved Buildings

The relocation of agriculture-related structures is strongly discouraged. Still, because of their utilitarian nature, many farm buildings have been moved over time. A dearth of records can make it difficult to document whether or not farm buildings have been moved. Because of these unique circumstances, moved farm buildings may be listed given they meet certain conditions. Because moved buildings are no longer associated with their historical setting, they may not be listed under Criterion A. If a farm building was moved prior to the period for which it is associated with a historic person, its period of significance, it may be listed under Criterion B. Moved farm buildings may be listed under Criterion C if they retain "enough historic features to convey [their] architectural values and retain integrity of design, materials, workmanship, feeling, and association."

Figure 70: Kansas barn. Brenda Spencer.

B. Integrity of Setting – Historic Context and Stand-Alone Buildings

Because the farm setting is essential to interpreting farm buildings, the demolition or removal of farmhouses and farm buildings is strongly discouraged. As large farm operations have subsumed smaller farmsteads, many significant buildings have fallen out of use and suffered severe deterioration or demolition. In many instances, only the largest structure(s) – a barn, corncrib, granary and/or farmhouse – remains. Although standalone Primary Farm Structures are not eligible for listing under Criterion A because they no longer retain their historic setting, standalone barns, corncribs and granaries may be eligible for listing under Criterion C as examples of their Property Types. Because farmhouses have no association with a farm setting without associated farm buildings, standalone farmhouses may not be listed under this MPS. This does not preclude farmhouses from being individually listed outside of this MPS under Criterion A for non-farm-related historical significance or Criterion C for architectural significance.

In contrast to standalone barns, granaries, and corn cribs, standalone Secondary Farm Structures and Features are not generally eligible for individual listing under this MPS. Exceptions to this rule include post-rock fences, which are a disappearing resource that is unique to Kansas. Generally, Secondary Farm Structures and features are eligible as parts of an intact farmstead. Farmsteads, collections of farm buildings where a majority are historic, are eligible for listing on the national register under Criterion A for their association with Agriculture and/or C in the area of Architecture. A farmstead is composed of a collection of farm buildings, generally including a barn, associated Secondary Farm Structures and Features, and, sometimes, a farmhouse. Additionally, primary and/or secondary farm buildings and related structures may be listed as a related grouping (See "Registration Requirements"). The existence of a farmhouse that is not yet 50 years old or does not retain the necessary integrity to be included as part of a farmstead will not necessarily negatively affect the eligibility of the farmstead. The house would simply be included as a non-contributing resource to the farmstead.


Figure 70: Inappropriate barn addition, Graham County. Brenda Spencer.

Other non-farm Agriculture-Related Buildings, such mills and grain elevators, are individually eligible for listing under Criterion A for their association with the Kansas grain or milling industry, or C as examples of their type.

C. Integrity of Design – Modifications and Additions

Primary and Secondary Farm Structures and Features were constantly adjusted by ingenious farmers to enhance the viability and efficiency of their farms. Additions, which are common, will not generally affect the overall integrity of

barns and other outbuildings and structures provided they do not greatly affect a building's proportions. Because certain features are essential in defining the character of barns, these features must be retained. For instance, hay doors and hay hoods are essential in interpreting a barn's hay storage function in barns with no interior drives for unloading hay. These features should be intact and visible from the barn's
exterior in order for a barn to be eligible for individual listing. In addition, a barn's main entrance, generally centered on the gable end or broad side and accessed by a sliding door, must be extant. Other features, including primary windows, must also remain uncovered. Many barns, for instance, are marked by repetitive window openings. The implied line of these windows is important to conveying the barn's overall design. Most barn interiors feature a center aisle flanked by stalls, mangers, stanchions and stallion pens. Changes to these interior features will not affect a building's national register eligibility provided the overall plan configuration is retained and the haymow is intact.

D. Integrity of Materials – Farm Fabric

Figure 71: Close-up of stone barn, Pottawatomie County. Brenda Spencer.

For more than a century, farmers and property owners have been fire-proofing, protecting, and extending the life of their barns and outbuildings through the application of new materials. Few roofs, for instance, are still clad with wood shingles. Likewise, original wood siding has often been covered with other materials, including corrugated metal and steel. Because roof repairs are necessary to maintaining a barn's structural integrity, most roofing materials are acceptable provided they do not affect the overall roof form or result in removal of key features, such as the hay hood. Roofing applications that "box in" exposed rafter tails and other details are discouraged. Historic corrugated siding and pressed-metal siding are historic materials whose application is acceptable applications to barns, outbuildings, grain elevators and mills. The application of contemporary or substitute materials is discouraged.

E. Integrity of Workmanship – Decorative Materials and Deterioration

Although utilitarian in nature, agriculture-related structures embody workmanship from a bygone era. Decorative features include window hoods, cupolas, dormers, weathervanes, lightening rods, and dog-eared and saw-toothed boards. Unique construction techniques include mortise-and-tenon joints. Innovative utilitarian interior features include stalls, stanchions, mangers, sliding and Dutch doors, and grain and hay chutes. Built-in equipment

found in barns include hay tracks, hay forks, and manure carriers. Retention of these features, which convey the workmanship of the builders and users of the barns, is strongly encouraged. However, former removal of some of these features will not, in itself, render the barn ineligible for listing.

Additionally, the ability to maintain the integrity of workmanship is compromised when a structure is severely deteriorated. Therefore, severely deteriorated structures are not generally eligible for listing under this MPS. A preliminary determination of ineligibility due to deterioration as part of this study, does not preclude re-evaluation for purposes of the rehabilitation tax credits.

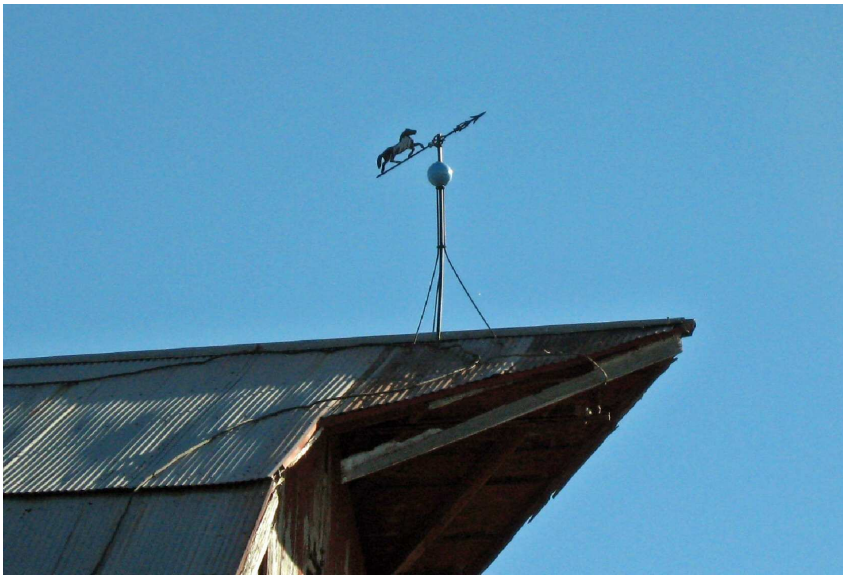

Figure 73: Weathervane and Lightening Rod. Jefferson County. Susan Ford.

F. Integrity of Feeling – An Agricultural Atmosphere

According to the National Park Service, "Feeling is the quality that a historic property has in evoking the aesthetic or historic sense of a past period of time." On some farms, feeling is enhanced through the farm's continued use for agriculture-related purposes. On other farms, it may be the rich layers of sites, sounds and smells related to the farm's past – the smell of hay, the sound of the sliding barn door, the presence of tack.

Integrity of Feeling is a compilation of all other areas of integrity, including location, setting, materials, and workmanship. Alteration of those components that contribute to the farm atmosphere are strongly discouraged.

Changes that can affect integrity of feeling include the addition of curbs, parking lots, and manicured lawns that can be added to farms or barns that are surrounded by suburban development or found in barns that are no longer part of a working farm. Although original use is not a requirement for listing, farm buildings that retain their agricultural use and/or remain in a rural setting are more apt to retain integrity of feeling.

G. Integrity of Association – Ties that Bind

In order to have Integrity of Association, a property, building, structure or feature should retain the characteristics that connect it to its area of significance. For instance, in order for a property to be eligible for listing under Criterion B for its association with a significant historic person, it must maintain the characteristics that tie it to that person. If a building was heavily modified after a significant person occupied it, then it no longer maintains its integrity of association. Many agriculture-related resources will be eligible for listing under Criterion A in the area of Agriculture. In order to list under this Criterion, a resource must maintain the characteristics that connect it to its agricultural past. Some, such as mills, may be eligible under Criterion A in the area of Industry. These resources must retain the characteristics that tie them to industry. Intact examples of barn types may be listed under Criterion C as examples of their type. These buildings must retain the characteristics that associate them with the type. For instance, Gambrel-Roof Barns, which were built to store hay, must retain their hay mow, hay hood, and hay doors.

V. Registration Requirements – Primary Farm Structures

Agriculture-related structures and features may be listed in the National Register of Historic Places either individually or as part of an intact Farmstead (see "Farmsteads" below). Below are the registration requirements for barns, corncribs, granaries and farmhouses.

Barns, Corncribs and Granaries

Barns, Corncribs and Granaries may be listed alone – or as part of a farmstead (if included in a collection of associated buildings which constitute a Farmstead as defined in this MPS provided they meet the requirements set forth below). These buildings may be listed under Criterion C as examples of their building type, and/or Criterion A in the area of Agriculture.

Overall Exteriors - To be listed individually, corncribs and granaries must retain their major character-defining features. Hay mows, hay hoods and hay doors are essential in interpreting a barn's hay-storage function in barns with no interior drives for unloading hay. Wood-framed barns with no drive-in interior access to haymows must retain their historic hay doors and hay hoods, which must remain visible from the exterior. Barns that feature repetitive window openings that create an implied line essential to their overall design, must retain these window openings, which must remain visible from the exterior. Principal entrances, generally centered on the gable ends or broad sides of barns, must be intact in order for a barn to be individually eligible.

Unlike barns, corncribs and granaries generally have few character-defining features. Although modified corncribs may be listed as part of a Farmstead, they must retain their open ventilation slats in order to be listed individually. Likewise, although modified granaries may be listed as part of a Farmstead, they should have limited ventilation in order to convey their original use as granaries and be individually listed as examples of granaries.

Exterior Materials – The vast majority of Kansas barns feature wood as their primary exterior material. The wholesale application of new wood to replace old wood is discouraged. In the 1910s and 1920s, some farmers chose to clad their barns with pressed metal or corrugated metal siding. In some cases, this metal constitutes the original exterior cladding. In many instances, however, farmers applied metal to their existing wood barns to fireproof and strengthen them. Historic application of pressed metal or corrugated metal siding alone will not affect a building's eligibility. Although the former application of non-original cladding will not necessarily affect a farm building's eligibility, future application of such materials may not meet the Secretary of the Interior's Standards for purposes of the rehabilitation tax credit program or other funding programs.

Sixteen percent of the Kansas barns surveyed were masonry, most of them limestone or sandstone. Five percent of the barns surveyed were concrete. The visibility of historic masonry, including concrete, is key to interpreting various barn types, including Kansas Vernacular Barns and Bank Barns. Therefore, additions or modifications, including the application of non-original siding that conceals historic masonry may render masonry barns ineligible for listing.

Historic roofing materials include wood shingles (sawn), composition shingles, rolled roofing, corrugated metal, and, in rare cases, pan or clay tile. In most cases, historic barn buildings retain one of the above roofing materials. That said, because intact roofs are essential to the long-term protection of historic barns, the application of substitute roofing materials, such as enameled standing-seam metal, will not itself preclude the eligibility of a barn, corncrib or granary. Although boxed-in eaves are not recommended, this treatment alone will not negatively affect a building's eligibility. However, new roofs must retain key features such as hay hoods.

Additions - Additions, which are common, will not generally affect the overall integrity of barns and other outbuildings and structures provided they do not greatly affect a building's proportions or obscure principal elevations. The scale of an addition should be weighed against the scale of the building. If it is out of proportion with the building, it may render the building ineligible for individual listing or render it non-contributing to a Farmstead. Although additions may not necessarily affect a farm building's eligibility, new additions may not meet the Secretary of the Interior's Standards for purposes of the rehabilitation tax credit program or other funding programs. Although new construction does not qualify for funding through the rehabilitation tax credit program, related new construction is reviewed as part of the tax credit review process.

Interiors - Most barn interiors feature a center aisle flanked by stalls, mangers, stanchions and stallion pens. However, there are many variations in plan configuration. Corn crib and granary interiors are generally very simple. Changes to these interior features will not affect a building's national register eligibility provided the overall plan configuration, including the haymow on the upper level, is retained. Interior changes will not affect a Primary Farm Structure's ability to be listed as part of a Farmstead.

Farmhouses
Although stand-alone farmhouses may be eligible for individual listing for their architectural significance or association with a significant person, they may not be individually listed under this MPS. Farmhouses may be listed as part of a Farmstead (See "Farmsteads" below) provided they are at least fifty years old and retain historic integrity. Many farmers expanded their farmhouses over time. Additions will not generally negatively affect a farmhouse's contributing status provided they are proportional to the building's overall mass. In accordance with the Kansas SHPO's substitute siding policy, farmhouses with secondary non-historic siding are not eligible as parts of Farmsteads.

VI. Registration Requirements – Secondary Farm Structures and Features

Secondary Farm Structures are not generally eligible for individual listing. However, they may be listed as contributing features of an intact Farmstead (See "Farmsteads" below). Secondary Farm Buildings, like Primary Farm Buildings, are typically not in use for the function for which they were originally designed. Changes in use will not affect eligibility for listing. Because adaptive uses help ensure a building's long-term maintenance, these uses are encouraged.

To be listed as a contributor to a farmstead, Secondary Farm Structures must generally retain their basic form and the structure-specific character-defining features listed below.

Quonset Barns
As corrugated metal exteriors are key character-defining features of Quonset barns, such historic exterior materials should not be concealed.

Poultry Houses
Character-defining features include shed roofs, natural lighting, and ventilation. These features should be retained.

Silos
Lack of ventilation is essential in silos. Silos should have limited openings.

VII. Registration Requirements – Farmsteads

To be eligible for listing as a Farmstead, a property must have at least four associated historic agriculture-related structures, including a barn and at least three other structures. One of these three associated structures may be a farmhouse. However, a farmhouse is not essential to a farmstead. For instance, a Farmstead may consist of an intact barn and three or more other Agriculture-related structures, such as a granary, smokehouse and poultry house. Features,

such as windmills and fences, may be contributors to a Farmstead, they may not be included in the count toward Farmstead status. For instance, a barn, poultry house and fence alone do not constitute a Farmstead for purposes of this MPS. Although listing associated farmland is not a requirement for listing farmsteads, the inclusion of associated farmland in Farmstead nominations is encouraged.

Of the total resources that comprise a Farmstead, a majority must be historic. For instance, a Farmstead comprised of eight buildings including a farmhouse, barn, chicken house, silo, modern garage, and three "Morton" buildings would not be eligible for listing because half of the existing structures are contemporary. Contributors to farmsteads may have a lesser degree of integrity than structures listed individually under this MPS.

The "Associated Grouping" category accommodates listing of related farm buildings and structures that may not meet the above definition of an eligible farmstead. The "Grouping" must include one or more primary farm structures and one or more secondary farm buildings or related structures. The most common example of a grouping will be a barn and associated structure such as a silo, corral or windmill. "Associated Groupings" will generally not be comprised of a historic farmstead but rather a group of related historic buildings and structures within a farmstead. Associated groupings will generally only include historic buildings or structures and like farmsteads, resources may have a lesser degree of integrity than those listed individually under this MPS.

VIII. Registration Requirements – Other Agriculture-Related Buildings

Grain Elevators and Mills may be individually listed in the National Register of Historic Places under this MPS under provided they are at least 50 years old and retain their historic integrity. Many wood-framed elevators and mills were covered with corrugated metal to improve their resistance to fire. The addition of corrugated metal will not render these buildings ineligible for listing. Steel, brick, and tile elevators are very rare; therefore, a great effort should be made to list these structures, with less consideration for integrity. As window openings are essential to the character of mills, window openings must remain intact. Window replacement is not recommended. However, the absence of original windows will not negatively affect a mill's eligibility. As in the case of barns, additions that affect the proportions of grain elevators and mills could negatively affect their eligibility. Because elevators and mills are multi-story buildings, small additions that do not obscure principal architectural features will not affect eligibility.

H. SUMMARY OF IDENTIFICATION AND EVALUATION METHODS

Introduction

The Kansas State Historic Preservation Office (SHPO) hired Brenda R. Spencer of Preservation Planning and Design in April 2007 to conduct a survey of the state's Agriculture-Related Buildings with a focus on historic barns. The survey project began with a series of meetings with the consultant team, the SHPO, and Kansas Barn Alliance President Robert Marsh, who recently completed a book on Kansas barns. The meetings focused on the preliminary development of a typology used to classify barns, and the process for identifying the barns to be surveyed. The initial typology was developed through an evaluation of national and regional barn typologies and Marsh's prior findings.

Identification

The project scope of work called for the survey of 315 barns, an average of three barns per county. To identify these barns, Spencer worked with the Kansas State University Extension Service and Kansas Electric Cooperative to publish articles in their farm publications. The Kansas State Historical Society also contacted local historical societies about the project. Together, these solicitations resulted in calls and emails regarding approximately 700 barns, the first 300 of which were slated for survey. Spencer scheduled appointments with project contacts to visit each of the surveyed properties.

Survey

In consultation with the SHPO Spencer customized the state's Historic Property Survey Form for the survey. For administrative and travel purposes, the state was divided into six geographic regions. The list of barns to be surveyed was sorted by the regions and the survey was conducted by region. Spencer began surveying barns in North Central Kansas in mid-June and generally worked around the state counter-clockwise, completing the survey of barns in Northeast Kansas in October. Spencer traveled approximately 12,000 miles surveying approximately 300 barns in less than five months.

Spencer sub-contracted with Susan Ford to survey barns in the Northeast corner of the state and with Kathy Morgan to survey of barns in South Central Kansas outside of Sedgwick County. Ford and Morgan surveyed a total of approximately fifty barns. Surveyors used a hard copy of the survey form to record data in the field. Digital photos were taken and a site plan sketched for each surveyed property. The data was then entered into a Microsoft Access database.

As they completed a region or multiple regions, the project team submitted survey data to the SHPO. The submissions included the electronic database, electronic photo files, electronic site plan files, electronic remarks files, and an index to the surveyed properties. Upon completion of all regions, the project team reviewed the surveyed properties and re-evaluated the preliminary typology, revising the Property Types to reflect the survey findings. The team also used the survey findings to develop the registration requirements, which were used to make preliminary determinations of national register eligibility for the properties surveyed. Finally, the Microsoft Access database was merged with the blank survey form (Microsoft Word template)

resulting in completed survey forms for each barn. Digital photos, site plans and narrative remarks were manually inserted on each form before the forms were printed.

The final submission to KSHS on the survey phase of the barns project is comprised of "final" electronic files, and hard copies of the completed survey forms for each barn and the survey report.

Contexts

Spencer sub-contracted with Christy Davis of Davis Preservation, LLC to develop the historic contexts for the Multiple Property Submission. Davis reviewed numerous secondary sources on the topics of Kansas history, barns, agriculture-related buildings, agricultural history, and agricultural implements. In addition, Davis conducted archival research at both the Kansas State Historical Society and Kansas State University's Special Collections. Archival research was guided by the *Bibliography of the History of Agriculture and Rural Life in Kansas, 1820-1945*, a document prepared by Kansas State University (KSU, formerly Kansas State Agricultural College) with assistance from the United States Agricultural Information Network's National Preservation Project. Davis reviewed all issues of KSU's *Agricultural Experiment Station Bulletin* in addition to numerous theses and dissertations. The research helped inform the development of chronological contexts on the history of Kansas agriculture, as well as a context on materials and construction techniques.

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